

JOURNAL OF THE

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"A Little Neglect May Breed Great Mischief"

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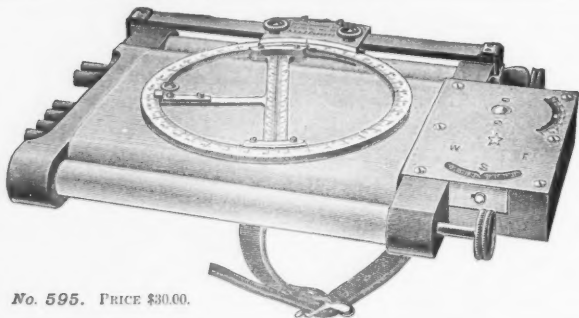
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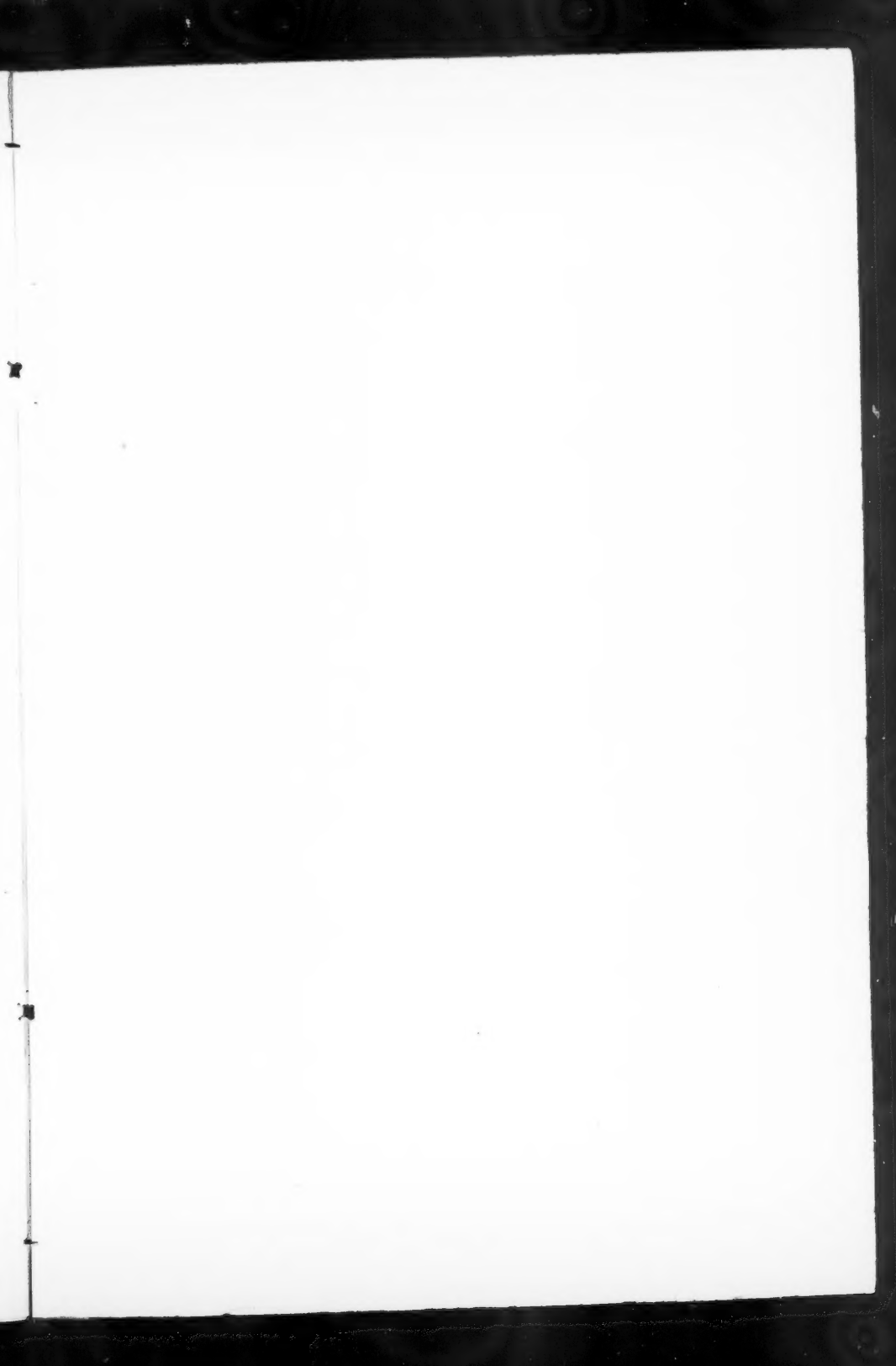
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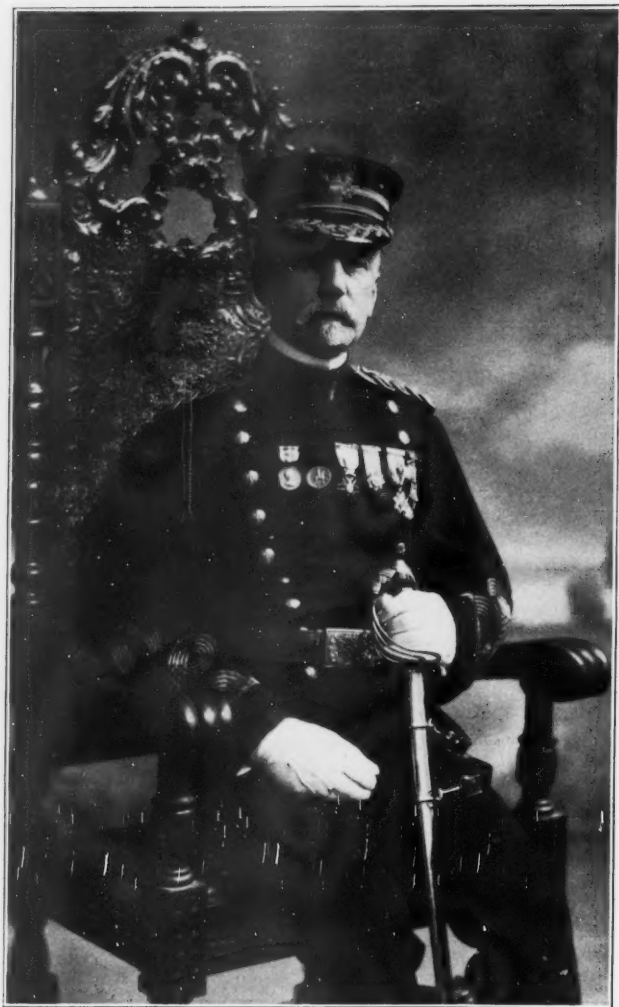
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SEPTEMBER, 1909.

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THE BATTLE OF GETTYSBURG.*

At the Headquarters, Second Army Corps.

Army of the Potomac, near Harper's Ferry,

July 16, 1863.

THE great battle of Gettysburg is now an event of the past. The composition and strength of the armies, their leaders, the strategy, the tactics, the result, of that field are to-day by the side of those of Waterloo—matters of history. A few days ago these things were otherwise. This great event did not so “cast its shadows before” as to moderate the hot sunshine that streamed upon our preceding march, or to relieve our minds of all apprehension of the result of the second great rebel invasion of the soil north of the Potomac.

No—not many days, since, at times we were filled with fears and forebodings. The people of the country, I suppose, shared the anxieties of the army, somewhat in common with us, but

*This graphic account of the battle of Gettysburg, written only a few days after the battle, has been furnished us by Major General John A. Wiley, National Guard of Pennsylvania. It was in pamphlet form and the name “Haskell” only is appended to the article. It appears that the pamphlet is a reprint from some college magazine, as a footnote states that it was “written by our classmate Haskell,” etc.

General Wiley writes that “Haskell was an officer of a Michigan regiment and after the battle of Gettysburg received much recognition and rapid promotion. In the Wilderness he was a colonel and was killed at Cold Harbor. I am informed by his nephew that there was a commission, or notice, of his appointment as Brigadier General in his unopened mail found after his death.” An examination of the reports of the

they could not have felt them as keenly as we did. We were upon the immediate theater of events as they occurred from day to day, and were of them. We were the army whose province it should be to meet this invasion and repel it; on us was the responsibility for results, most momentous for good or ill, but yet in the future. And so in addition to the solicitude of all good patriots, we felt that our own honor as men and as an army, as well as the safety of the Capitol and the country, was at stake.

And what if that invasion should be successful, and in the coming battle the Army of the Potomac should be overpowered? Would it not be? When our army was much larger than at present, had rested all winter, and, nearly perfect in all its departments and arrangements, was the most splendid army this continent ever saw, only a part of the rebel force, which it now had to contend with, had defeated it—its leader, rather—at Chancellorsville! Now the rebel had his whole force assembled; he was flushed with recent victory; was *arrogant* in his career of unopposed invasion; at a favorable season of the year, his daring plans, made by no unskilled head, to transfer the war from his own to his enemy's ground, were being successful; he had gone days' march from his front before Hooker moved or was aware of his departure. Then I believe the army in general, both officers and men, had no confidence in Hooker, either in his honesty or ability. Did they not charge him personally with the defeat at Chancellorsville? Were they not still burning with indignation against him for that disgrace? And now again under his leadership they were marching against the enemy! And they knew of nothing, short of the providence of God, that could or would remove him. For many reasons, dur-

battle of Gettysburg made by Generals Gibbon, Hancock, and others indicate that this officer was Lieutenant Frank A. Haskell, Sixth Wisconsin. Of him General Gibbon reports: "I desire to call particular attention to the manner in which several of the subordinate reports mention the services of my gallant aide, Lieutenant F. A. Haskell, Sixth Wisconsin, and to add my testimony of his valuable services." This same officer was killed on June 3, 1864, at Cold Harbor, while in command of the Thirty-sixth Wisconsin, and in their reports of this campaign of the Wilderness, Generals Gibbon, Hancock and several others speak of his gallantry and valuable services and lament his untimely death.

EDITOR.

ing the marches prior to the battle, we were anxious and at times heavy at heart.

But the Army of the Potomac was no band of school girls. They were not the men likely to be crushed or utterly discouraged by any mere circumstances in which they might find themselves placed. They had lost some battles—they had gained some. They knew what defeat was, and what was victory. But here is the greatest praise that I can bestow upon them, or upon any army; with the elation of victory, or the depression of defeat, amidst the hardest toils of the campaign, under unwelcome leadership, at all times and under all circumstances, they were a reliable army still. The Army of the Potomac would do as it was told, always.

Well clothed and well fed—there never could be any ground of complaint on these heads—but a mighty work was before them. Onward they moved—night and day were blended—over many a weary mile, through dust and through mud, in the broiling sunshine, in the flooding rain, over steeps, through defiles, across rivers, over last year's battle fields, where the skeletons of our dead brethren by hundreds lay bare and bleaching, weary, without sleep for days, tormented with the newspapers and their rumors that the enemy was in Philadelphia, in Baltimore, in all places where he was not—yet these men could still be relied upon, I believed, when the day of conflict should come. "*Hæc olim meminisse juvabit!*" We did not then know this. I mention them now that you may see that in these times we had several matters to think about, and to do, that were not so pleasant as sleeping upon a bank of violets in the shade.

In moving from near Falmouth, Va., the army was formed in several columns, and took several roads. The Second Corps, the rear of the whole, was the last to move, and left Falmouth at daybreak on the 15th of June, and pursued its march through Aquia, Dumfries, Wolf Run Shoals, Centerville, Gainesville, Thoroughfare Gap—this last we left on the 25th, marching back to Haymarket, where we had a skirmish with the cavalry and horse artillery of the enemy—Gum Spring, crossing the Potomac at Edward's Ferry, thence through Poolesville, Frederick, Liberty, and Uniontown. We marched from near Frederick to

Uniontown, a distance of thirty-two miles, from eight o'clock a. m. to nine p. m., on the 28th. I think this is the longest march accomplished in so short a time by a corps during the war. On the 28th, while we were near this latter place, we breathed a full breath of joy and of hope. The providence of God had been with us—we ought not to have doubted it—General Meade commanded the Army of the Potomac!

Not a favorable time, one would be apt to suppose, to change the general of a large army on the eve of battle, the result of which might be to destroy the government and the country. But it should have been done long before; at all events, any change could not have been for the worse, and the administration, therefore, hazarded little in making it now. From this moment my own mind was easy concerning results. I now felt that we had a clear-headed, honest soldier to command the army, who would do his best always—that there would be no repetition of Chancellorsville. Meade was not as much known in the army as many of the other corps commanders, but the officers who knew, all thought highly of him; a man of great modesty, with none of those qualities which are noisy and assuming, and hankering for cheap newspaper fame—not at all of the "*gallant*" Sickles stamp. I happened to know much of General Meade. He and General Gibbon have always been very intimate, and I had seen much of him. I think my own notions concerning General Meade at this time were shared quite generally by the army; at all events, all who knew him shared them.

By this time, by reports that were not mere rumors, we began to hear frequently of the enemy and of his proximity. His cavalry was all about us, making little raids here and there, capturing now and then a few of our wagons, and stealing a good many horses, but doing us really the least amount possible of harm, for we were not by these means impeded at all, and this cavalry gave no information at all to Lee, that he could rely upon, of the movements of the Army of the Potomac. The infantry of the enemy was at this time in the neighborhood of Hagerstown, Chambersburg, and some had been at Gettysburg, possibly were there now. Gettysburg was a point of strategic

importance; a great many roads, some ten or twelve at least, concentrated there, so the army could easily converge to, or, should a further march be necessary, diverge from, this point. General Meade, therefore, resolved to try to seize Gettysburg, and accordingly gave the necessary orders for the concentration of his different columns there. Under the new auspices the army brightened and moved on with a more majestic step toward the yet undefined field of conflict.

The First Corps, General Reynolds, already having the advance, was ordered to push forward rapidly, and take and hold the town, if he could; the rest of the army would assemble to his support. Buford's cavalry co-operated with this corps, and on the morning of the 1st of July found the enemy near Gettysburg and to the west, and promptly engaged him. The First Corps, having bivouacked the night before south of the town, came up rapidly to Buford's support, and immediately a sharp battle was opened with the advance of the enemy. The First Division, General Wadsworth, was the first of the infantry to become engaged; but the other two, commanded respectively by Generals Robinson and Doubleday, were close at hand, and forming the line of battle to the west and northwest of the town, at a mean distance of about a mile away. The battle continued for some hours with various success, which was on the whole with us until near noon. At this time a lull occurred, which was occupied by both sides in supervising and re-establishing the hastily formed lines of the morning. New divisions of the enemy were constantly arriving and taking up positions, for this purpose marching in upon the various roads that terminate at the town, from the west and north. The position of the First Corps was then becoming perilous in the extreme, but it was improved at a little before noon by the arrival upon the field of two divisions of the Eleventh Corps, General Howard, these divisions commanded respectively by Generals Schurz and Barlow, who, by order, posted their commands to the right of the First Corps, with their right retired, forming an angle with the line of the First Corps. Between three and four o'clock in the afternoon, the enemy, now in overwhelming force, resumed the battle with spirit. The portion of the Eleventh Corps, making ineffectual

opposition to the advancing enemy, soon began to fall back. General Barlow was badly wounded, and their retreat soon became a disorderly rout and panic. They were hotly pursued in their flight through the town, and, owing to their disorganized condition, large numbers fell into the hands of the enemy.

The First Corps, deprived of this support, out-flanked upon either hand, and engaged in front, was compelled to yield the field. Making its last stand upon what is called "Seminary Ridge," not far from the town, it fell back in considerable confusion, through the southwest part of the town, making brave resistance, however, but with considerable loss. The enemy did not see fit to follow, or to attempt to, further than the town, and so the fight of the 1st of July closed here. I suppose our losses during the day would exceed five thousand, of whom a large number were prisoners. Such usually is the kind of loss sustained by the Eleventh Corps. You will remember that the old "Iron Brigade" is in the First Corps, and consequently shared this fight, and I hear their conduct praised on all hands.

In the Second Wisconsin, Colonel Fairchild lost his left arm; Lieutenant-Colonel Stevens was mortally wounded, and Major Mansfield was wounded; Lieutenant-Colonel Collis, of the Seventh Wisconsin, and Lieutenant-Colonel Dudley, of the Nineteenth Indiana, were badly, dangerously wounded, the latter by the loss of his right leg above the knee.

I saw "John Burns," the only citizen of Gettysburg who fought in the battle, and I asked him what troops he fought with. He said, "Oh, I pitched in with them Wisconsin fellers." I asked what sort of men they were, and he answered: "They fit terribly—the Rebs couldn't make anything of them fellers." And so the brave compliment the brave. This man was touched by three bullets from the enemy, but not seriously wounded.

But the loss of the enemy to-day was severe, also—probably in killed and wounded as heavy as our own, but not so great in prisoners. Of these latter the "Iron Brigade" captured almost an entire Mississippi brigade, however.

Of the events so far, of the 1st of July, I do not speak from personal knowledge. I shall now tell my introduction to these events.

At eleven o'clock a. m., on that day, the Second Corps was halted at Taneytown, which is thirteen miles from Gettysburg, south; and there, awaiting orders, the men were allowed to make coffee and rest. At between one and two o'clock in the afternoon, a message was brought to General Gibbon requiring his immediate presence at the headquarters of General Hancock, who commanded the corps. I went with General Gibbon, and we rode at a rapid gallop to General Hancock. At General Hancock's headquarters the following was learned: The First Corps had met the enemy at Gettysburg, and had possession of the town; General Reynolds was badly, it was feared mortally, wounded; the fight of the First Corps still continued. By General Meade's order, General Hancock was to hurry forward and take command upon the field of all troops there, or which should arrive there; the Eleventh Corps was near Gettysburg when the messenger who told of the fight left there, and the Third Corps was marching up, by order, on the Emmetsburg Road. General Gibbon—he was not the ranking officer of the Second Corps after Hancock—was ordered to assume the command of the Second Corps.

All this was sudden, and for that reason, at least, exciting; but there were other elements in this information that aroused our profoundest interest. The great battle that we had so anxiously looked for during so many days had at length opened. It was a relief, in some sense, to have these accidents of time and place established. What would be the result? Might not the enemy fall upon and destroy the First Corps before succor could arrive?

General Hancock with his personal staff, at about two o'clock p. m., galloped off towards Gettysburg. General Gibbon took his place in command of the corps, *appointing me his Acting Assistant Adjutant-General*. The Second Corps took arms at once, and moved rapidly towards the field. It was not long before we began to hear the dull booming of the guns; and as we advanced, from many an eminence or opening among the trees we could look out upon the white battery smoke puffing up from the distant field of blood and drifting up to the clouds. At these sights and sounds the men looked more serious than be-

fore, and were more silent; but they marched faster, and straggled less. At about five o'clock p. m., as we were riding along at the head of the column, we met an ambulance, accompanied by two or three wounded officers. We knew them to be staff officers of General Reynolds. Their faces told plainly enough what load the vehicle carried—it was the dead body of General Reynolds. Very early in the action, while seeing personally to the formation of the lines under fire, he was shot through the head by a musket or rifle bullet, and killed almost instantly. His death at this time affected us much, for he was one of the *soldier* generals of the army—a man whose soul was in his country's work, which he did with a soldier's high honor and fidelity.

I remember seeing him after the first battle of Fredericksburg—he then commanded the First Corps—and while Meade's and Gibbon's divisions were assaulting the enemy's works; he was the very beau ideal of the gallant general. Mounted upon a superb black horse, with his head thrown back and his great black eyes flashing fire, he was everywhere upon the field, seeing all things and giving commands in person. He died as many a friend, and many a foe, to the country have died in this war.

Just as the dusk of evening fell, from General Meade the Second Corps have orders to halt where the head of the column then was, and to go into position for the night. The Second Division (Gibbon's) was accordingly put in position upon the left of the (Taneytown) road, its left near the southeastern base of "Round Top"—of which mountain more anon—and the right near the road; the Third Division was posted upon the right of the road, abreast of the Second; and the First Division in rear of these two—all facing towards Gettysburg. Arms were stacked and the men lay down to sleep—alas! Many of them their last but the great final sleep upon the earth.

Late in the afternoon, as we came near the field, from some slightly wounded men we met, and occasional stragglers from the scene of operations in front, we got many rumors, and much disjointed information, of battle, of lakes of blood, of rout and panic and indescribable disaster; from all of which the narrators were just fortunate enough to have barely escaped, the sole survivors. These stragglers are always terrible liars!

About nine o'clock in the evening, while I was yet engaged in showing the troops their positions, I met General Hancock, then on his way from the front to General Meade, who was back towards Taneytown; and he, for the purpose of having me advise General Gibbon, for his information, gave me a quite detailed account of the situation of matters at Gettysburg, and of what had transpired subsequently to his arrival there.

He had arrived and assumed command there, just when the troops of the First and Eleventh Corps, after their repulse, were coming in confusion through the town. Hancock is just the man for such an emergency as this. Upon horseback, I think he was the most magnificent-looking general in the whole Army of the Potomac, at that time. With a large, well-shaped person, always dressed with elegance, even upon that field of confusion, he would look as if he was "monarch of all he surveyed," and few of his subjects would dare to question his right to command, or do aught else but obey. His quick eye, in a flash, saw what was to be done, and his voice and his royal hand at once commenced to do it. General Howard had put one of his divisions—Stein-*wher's*—with some batteries, in position, upon a commanding eminence at the "Cemetery," which, as a reserve, had not participated in the fight of the day; and this division was now of course steady. Around this division the fugitives were stopped, and the shattered brigades and regiments, as they returned, were formed upon either flank, and faced toward the enemy again. A show of order, at least, speedily came from chaos. The rout was at an end; the First and Eleventh Corps were in line of battle again—not very systematically formed, perhaps—in a splendid position, and in a condition to offer resistance, should the enemy be willing to try them. These formations were all accomplished long before night. Then some considerable portion of the Third Corps—General Sickles—came up by the Emmitsburg road, and was formed to the left of the Taneytown road, on an extension of the line that I have mentioned; and all of the Twelfth Corps—General Slocum—arriving before night, the divisions were put in position, to the right of the troops already there, to the east of the Baltimore Pike. The enemy was in the town, and behind it, and to the east and west, and appeared to be in strong

force, and was jubilant over his day's success. Such was the posture of affairs as evening came on of the 1st of July. General Hancock was hopeful, and in the best of spirits; and from him I also learned that the reason of halting the Second Corps in its present position was, that it was not then known where, for the coming fight, the line of battle would be formed—up near the town, where the troops then were, or farther back towards Taneytown. He would give his views on this subject to General Meade, which were in favor of the line near the town—the one that was subsequently adopted—and General Meade would determine.

The night before a great pitched battle would not ordinarily, I suppose be a time for much sleep to generals and their staff officers. We needed it enough, but there was work to be done. This war makes strange confusion of night and day! I did not sleep at all that night. It would perhaps be expected, on the eve of such great events, that one should have some peculiar sort of feelings, something extraordinary, some great arousing and excitement of the sensibilities and faculties, commensurate with the event itself; this certainly would be very poetical and pretty, but so far as I am concerned, and I think I can speak for the army in this matter, there was nothing of the kind. Men who have volunteered to fight the battles of the country, had met the enemy in many battles, and had been constantly before them, as have the Army of the Potomac, were too old soldiers, and long ago too well have weighed chances and probabilities, to be so disturbed now. No, I believe the army slept soundly that night, and well; and I am glad the men did, for they needed it.

At midnight General Meade and staff rode by General Gibbon's headquarters, on their way to the field; and in conversation with General Gibbon, General Meade announced that he had decided to assemble the whole army before Gettysburg, and offer the enemy battle there. The Second Corps would move at the earliest daylight, and take up its position.

At three o'clock a. m., of the 2d of July, the sleepy soldiers of the Second Corps were aroused; before six the corps was up to the field, and halted temporarily by the side of the Taneytown road upon which it had marched, while some movements of other

troops were being made, to enable it to take position in the order of battle. The morning was thick and sultry, the sky overcast with low, vapory clouds. As we approached, all was astir upon the crests near the Cemetery, and the work of preparation was speedily going on. Men looked like giants there in the mist, and the guns of the frowning batteries so big that it was a relief to know that they were our friends.

Without a topographical map, some description of the ground and localities is necessary to a clear understanding of the battle. With the sketch that I have rudely drawn, without scale or compass, I hope you may understand my description. The line of battle, as it was established on the evening of the 1st, and morning of the 2d of July, was in the form of the letter "U," the troops facing outwards, and the Cemetery, which is at the point of the sharpest curvature of the line, being due south of the town of Gettysburg. Round Top, the extreme left of the line, is a small, woody, rocky elevation, a very little west of south of the town, and nearly two miles from it. The sides of this are in places very steep, and its rocky summit is almost inaccessible. A short distance north of this is a smaller elevation called "Little Round Top." On the very top of Little Round Top we had heavy rifled guns in position during the battle. Near the right of the line is a small woody eminence, named "Culp's Hill." Three roads come up to the town from the south, which near the town are quite straight, and at the town the extreme ones unite, forming an angle of about sixty or more degrees. Of these the farthest to the east is the Baltimore Pike, which passes by the east entrance to the Cemetery; the farthest to the west is the Emmittsburg road, which is wholly outside of our line of battle, but near the Cemetery is within a hundred yards of it; the "Taneytown Road" is between these, running nearly due north and south, by the eastern base of Round Top, by the western side of the Cemetery, and uniting with the Emmittsburg road between the Cemetery and the town. High ground near the Cemetery is named "Cemetery Ridge."

The Eleventh Corps—General Howard—was posted at the Cemetery, some of its batteries and troops actually among the graves and monuments, which they used for shelter from the

enemy's fire; its left resting upon the Taneytown road, and extending thence to the east, crossing the Baltimore Pike, and then bending backwards towards the southeast; on the right of the Eleventh came the First Corps, now, since the death of General Reynolds, commanded by General Newton, formed in a line curving still more to the south. The troops of these two corps were re-formed on the morning of the 2d, in order that each might be by itself, and to correct some things not done well during the hasty formation here the day before. To the right of the First Corps, and on an extension of the same line, along the crest and down the southeastern slope of Culp's Hill, was posted the Twelfth Corps—General Slocum—its right, which was the extreme right of the line of the army, resting near a small stream called "Rock Run." No changes that I am aware of occurred in the formation of this corps on the morning of the 2d. The Second Corps, after the brief halt that I have mentioned, moved up and took position, its right resting upon the Taneytown road, at the left of the Eleventh Corps, and extending the line thence, nearly half a mile, almost due south, towards Round Top, with its divisions in the following order, from right to left: the Third, General Alex. Hayes; the Second, (Gibbon's) General Harrow (temporarily); the First, General Caldwell. The formation was, in line by brigade in column, the brigades being in column by regiment, with forty paces interval between regimental lines, the Second and Third having each one, and the First Division two brigades. There were four brigades in the First, similarly formed, in reserve, one hundred and fifty paces in the rear of the line of their respective divisions. That is, the line of the corps, exclusive of its reserves, was the length of six regiments, deployed, and the intervals between them, some of which were left wide for the posting of the batteries, and consisted of four common deployed lines, each of two ranks of men; and a little more than one-third was in reserve.

The five batteries, in all twenty-eight guns, were posted as follows: Woodruff's Regular, six twelve-pound Napoleons, brass, between the two brigades in line of the Third Division; Arnold's "A," First Rhode Island, six three-inch Parrotts, rifled, and Cushing's Regular, four three-inch ordnance, rifled, between

the Third and Second Divisions; Hazard's (commanded during the battle by Lieutenant Brown), "B," First Rhode Island, and Rhorthy's New York, each six twelve-pound Napoleons, brass, between the Second and First Divisions.

I have been thus specific in the description of the posting and formation of the Second Corps, because they were works that I assisted to perform; and also that the other corps were similarly posted with reference to the strength of the lines, and the intermixing of infantry and artillery. From this, you may get a notion of the whole.

The Third Corps—General Sickles—the remainder of it arriving upon the field this morning, was posted upon the left of the Second, extending the line still in the direction of Round Top, with its left resting near Little Round Top. The left of the Third Corps was the extreme left of the line of battle, until changes occurred which will be mentioned in the proper place. The Fifth Corps—General Sykes—arriving on the Baltimore Pike about this time, was massed there near the line of battle, and held in reserve until sometime in the afternoon, when it changed position, as I shall describe.

I cannot give a detailed account of the cavalry, for I saw but little of it. It was posted near the wings, and watched the roads and movements of the enemy upon the flanks of the army, but further than this participated but little in the battle. Some of it was also used for guarding the trains, which were far to the rear. The artillery reserve, which consisted of a good many batteries, though I cannot give the number, or the number of guns, was posted between the Baltimore Pike and the Taneytown Road, on very nearly the centre of a direct line passing through the extremities of the wings. Thus it could be readily sent to any part of the line. The Sixth Corps—General Sedgwick—did not arrive upon the field until sometime after noon; but it was now not very far away, and was coming up rapidly upon the Baltimore Pike. No fears were entertained that "Uncle John," as his men call General Sedgwick, would not be in the right place at the right time.

These dispositions were all made early, I think before eight o'clock in the morning; skirmishers were posted well out all

around the line, and all put in readiness for battle. The enemy did not yet demonstrate himself. With a look at the ground now, I think you may understand the movement of the battle. From Round Top, by the line of battle, round to the extreme right, I suppose is about three miles. From this same eminence to the Cemetery extends a long ridge or hill—more resembling a great wave than a hill, however—with its crest, which was the line of battle, quite direct between the points mentioned. To the west of this, that is, towards the enemy, the ground falls away, by a very gradual descent, across the Emmittsburg Road, and then rises again, forming another ridge, nearly parallel to the first, but inferior in altitude, and something over a thousand yards away. A belt of woods extends partly along this second ridge, and partly farther to the west, at distances of from one thousand to thirteen hundred yards away from our line. Between these ridges, and along their slopes, that is, in front of the Second and Third Corps, the ground is cultivated, and is covered with fields of wheat, now nearly ripe, with grass and pastures, with some peach orchards, with fields of waving corn, and some farmhouses and their out-buildings along the Emmittsburg road. There are very few places within the limits mentioned where troops or guns could move concealed. There are some oaks, of considerable growth, along the position of the right of the Second Corps—a group of small trees, sassafras and oak, in front of the right of the Second Division of this corps, also; and considerable woods immediately in front of the left of the Third Corps, and also to the west of, and near Round Top. At the Cemetery, where is Cemetery Ridge, to which the line of the Eleventh Corps conforms, is the highest point in our line, except Round Top. From this the ground falls quite abruptly to the town, the nearest point of which is some five hundred yards away from the line, and is cultivated, and checkered with stone fences. The same is the character of the ground occupied by, and in front of the left of the First Corps, which is also on a part of Cemetery Ridge. The right of this corps, and the whole of the Twelfth, are along Culp's Hill, and in woods, and the ground is very rocky, and in some places in front precipitous—a most admirable position for defence from an attack in

front, where, on account of the woods, no artillery could be used with effect by the enemy. Then these last three mentioned corps had, by taking rails, by appropriating stone fences, by felling trees, and digging the earth, during the night of the 1st of July, made for themselves excellent breastworks, which were a very good thing indeed. The position of the First and Twelfth Corps was admirably strong, therefore. Within the line of battle is an irregular basin, somewhat wooded and rocky in places, but presenting few obstacles to the moving of troops and guns, from place to place along the lines, and also affording the advantage that all such movements, by reason of the surrounding crests, were out of view of the enemy. On the whole this was an admirable position to fight a defensive battle—good enough, I thought, when I saw it first, and better, I believe, than could be found elsewhere in a circle of many miles. Evils, sometimes at least, are blessings in disguise, for the repulse of our forces, and the death of Reynolds, on the 1st of July, with the opportune arrival of Hancock to arrest the tide of fugitives and fix it on these heights, gave us this position. Perhaps the position gave us the victory.

On arriving upon the field General Meade established his headquarters at a shabby little farmhouse on the left of the Taneytown Road, the house nearest the line and a little more than five hundred yards in rear of what became the centre of the position of the Second Corps—a point where he could communicate readily and rapidly with all parts of the army. The advantages of this position, briefly, were these: the flanks were quite well protected by the natural defences there—Round Top upon the left, and rocky, steep, untraversable ground upon the right. Our line was more elevated than that of the enemy, consequently our artillery had a greater range and power than theirs. On account of the convexity of our line, every part of the line could be reinforced by troops having to move a shorter distance than if the line were straight; further, for the same reason, the line of the enemy must be concave and consequently longer, and, with an equal force, thinner, and so weaker, than ours. Upon those parts of our line which were wooded, neither we nor the

enemy could use artillery; but they were so strong by nature, aided by art, as to be readily defended by a small against a very large body of infantry. Where the line was open, it had the advantage of having open country in front; consequently the enemy could not surprise us; we were on a crest, which besides the other advantages that I have named, had this: the enemy must advance to the attack up an ascent, and must therefore move slower and be, before coming upon us, longer under our fire, as well as more exhausted. These and some other things rendered our position admirable for a defensive battle.

So, before a great battle, was ranged the Army of the Potomac. The day wore on, the weather still sultry, and the sky overcast, with a mizzling effort at rain. When the audience has all assembled, time seems long until the curtain rises: so to-day. "Will there be a battle to-day?" "Shall we attack them?" "Will they attack us?" These and similar questions, later in the morning, were thought and asked a million times.

Meanwhile, on our part all was put in the best state of readiness for battle. Surgeons were busy riding about, selecting eligible places for hospitals, and hunting streams and springs and wells. Ambulances and ambulance men were brought up near the lines, and stretchers gotten ready for use. Who of us could tell but that he would be the first to need them? The Provost Guards were busy driving up all the stragglers and causing them to join their regiments. Ammunition wagons were driven to suitable places, and pack mules bearing boxes of cartridges, and the commands were informed where they might be found. Officers were sent to see that the men had each his hundred rounds of ammunition. Generals and their staffs were riding here and there among their commands to see that all was right. A staff officer or an orderly might be seen galloping furiously in the transmission of some order or message. All, all was ready, and yet the sound of no gun had disturbed the air or ear to-day.

Here let me state that according to the best information that I could get, I think a fair estimate of the enemy's force engaged in this battle would be a little upwards of a hundred thousand men of all arms. Of course we cannot now know, but there are reasonable data for this estimate. At all events there was no

disparity of numbers in the two opposing armies. We thought the enemy to be somewhat more numerous than we, and he probably was. But if ninety-five men should fight with a hundred and five, the latter would not always be victorious, and slight numerical differences are of much less consequence in great bodies of men. Skillful generalship and good fighting are the jewels of war. These concurring are difficult to overcome; and these, not numbers, must determine this battle.

During all the morning, and the night, too, the skirmishers of the enemy had been confronting those of the Eleventh, First, and Twelfth Corps. At the time of the fight of the 1st he was seen in heavy force north of the town; he was believed to be now in the same neighborhood in full force. But from the woody character of the country, and thereby the careful concealment of troops, which the enemy is always sure to effect, during the early part of the morning almost nothing was actually seen by us of the invaders of the North. About nine o'clock in the morning, I should think, our glasses began to reveal them at the west and northwest of the town, a mile and a half away from our lines. They were moving toward our left, but the woods of Seminary Ridge so concealed them that we could not make out much of their movements. About this time some rifled guns in the Cemetery at the left of the Eleventh Corps opened fire—almost the first shots of any kind this morning; and when it was found they were firing at a line of skirmishers merely, that were advancing upon the left of that and the right of the Second Corps, the officer in charge of the guns was ordered to cease firing, and was rebuked for having fired at all. These skirmishers soon engaged those of the right of the Second Corps, who stood their ground and were reinforced to make the line entirely secure. Their skirmish line kept extending farther and farther to their right, towards our left; they would dash up close upon ours, and sometimes drive them back a short distance, in turn to be repulsed themselves: and so they continued to do until their right was opposite the extreme left of the Third Corps. By these means they had ascertained the position and extent of our line, but their own masses were still out of view. From the time that the firing commenced, as I have mentioned, it

was kept up by the skirmishers until quite noon, often briskly, but with no definite results further than those mentioned, and with no considerable show of infantry on the part of the enemy to support. There was a farmhouse and out-buildings in front of the Third Division of the Second Corps, at which the skirmishers of the enemy had made a dash and dislodged ours posted there; and from this their sharpshooters began to annoy our line of skirmishers, and even the main line, with their long-range rifles. I was up to the line, and a bullet from one of the rascals hid there hissed by my cheek so close that I felt the movement of the air distinctly. And so I was not at all displeased when I saw one of our regiments go down and attack and capture the house and buildings and several prisoners, after a spirited little fight, and by General Hayes' order, burn the buildings to the ground.

About noon the Signal Corps, from the top of Little Round Top, with their powerful glasses, and the cavalry at our extreme left, began to report the enemy in heavy force making dispositions of battle to the west of Round Top and opposite to the left of the Third Corps. Some few prisoners had been captured, some deserters from the enemy had come in, and from all sources by this time we had much important and reliable information of the enemy, of his dispositions and apparent purposes. Their infantry consisted of three army corps, each consisting of three divisions. Longstreet, Ewell—the same whose leg Gibbon's shell had knocked off at Gainesville on the 28th of August last year—and A. P. Hill, each in their service having the rank of lieutenant-general, were the commanders of these corps. Longstreet's division commanders were Hood, McLaws and Pickett; Ewell's were Rhodes, Early and Johnson; and Hill's were Pender, Heath and Anderson. Stewart and Fitz Lee commanded divisions of cavalry. The rank of these division commanders, I believe, was that of major-general. They had about as much artillery as we did, but we never thought much of this arm in the hands of our adversaries. They have courage enough, but not the skill to handle it well. They generally fire too high, and their ammunition is assuredly of a very inferior quality. And of late we have begun to despise the enemy's cavalry, too; it used to have

enterprise and dash, but in the late cavalry contests ours has always been the victor, and so now we think that about all their cavalry is fit for is to steal a few of our mules occasionally and their negro drivers. The infantry of their army, however, is good—to deny this is useless. I never had any desire to; and if one should count up, it would possibly be found that they have gained more victories over us than we have over them; and they will now, doubtless, fight well, even desperately. And it is not horses or cannon that will determine the result of this confronting of the two armies, but the men with the muskets must do it—the infantry must do the sharp work. So we watched all this posting of forces as closely as possible, for it was a matter of vital interest to us, and all information relating to it was hurried to the commander of the army. Their line of battle was concave, bending around our own, with the extremities of the wings opposite to or a little outside of ours. Longstreet's Corps was upon their right, Hill's in the center, these two corps occupied the second or inferior ridge to the west of our position, as I have mentioned, with Hill's left bending towards and resting near the town, and Ewell's was upon their left, his troops being in and to the east of the town. This last corps confronted our Twelfth, First, and the right of the Eleventh Corps. When I have said ours was a good *defensive* position, this is equivalent to saying that that of the enemy was not a good *offensive* one, for these are relative terms and cannot be both predicated of the respective positions of the two armies at the same time. The reasons that theirs was not a good offensive position are the same already stated of ours for defence. Excepting occasionally for a brief time during some movement of the troops, or when advancing to attack, their men and guns were kept constantly and carefully, by woods and inequalities of grounds, out of our view.

Noon is past, one o'clock is past, and, save the skirmishing that I have mentioned, and an occasional shot from our guns, at something or other of the nature of which the ones who fired it were ignorant, there was no fight yet. Our arms were still stacked, and the men were at ease. As I looked upon those interminable rows of muskets along the crests, and saw how cool and good-spirited the men were, who were lounging about on

the ground among them, I could not, and did not, have any fears as to the result of the battle. The storm was near, and we all knew it by this time, which was to rain death upon these crests and down these slopes, and yet the men who could not, and would not, escape it, were as calm and cheerful generally as if nothing unusual were about to happen! You see, these men were veterans, and had been in such places so often that they were accustomed to them. But I was well pleased with the tone of the men to-day; I could almost see the foreshadowing of victory upon their faces, I thought. And I thought, too, as I had seen the mighty preparations go on to completion for this great conflict, the marshalling of these two hundred thousand men and the guns, of the hosts that now but a narrow valley divided, that to have been in such a battle, and to survive on the side of the victors, would be glorious. Oh, the world is most unchristian yet!

Somewhat after one o'clock p. m.—the skirmish firing had nearly ceased now—a movement of the Third Corps occurred, which I shall describe. I cannot conjecture the reason of this movement. From the position of the Third Corps, as I have mentioned, to the second ridge west, the distance is about a thousand yards, and there the Emmitsburg road runs near the crest of the ridge. General Sickles commenced to advance his whole corps, from the general line, straight to the front, with a view to occupy this second ridge along and near the roads. What his purpose could have been is past conjecture. It was not ordered by General Meade, as I heard him say, and he disapproved of it as soon as it was made known to him. Generals Hancock and Gibbon, as they saw the move in progress, criticised its propriety sharply, as I know, and foretold quite accurately what would be the result. I suppose the truth probably is that General Sickles supposed he was doing for the best; but he was neither born nor bred a soldier. But this move of the Third Corps was an important one—it developed the battle; the results of the move to the corps itself we shall see. Oh, if this corps had kept its strong position upon the crest, and, supported by the rest of the army, had waited for the attack of the enemy!

It was magnificent to see these ten or twelve thousand men

—they were good men—with their batteries, and some squadrons of cavalry upon the left flank, all in battle order, in several lines, with flags streaming, sweep steadily down the slope, across the valley, and up the next ascent, towards their destined position! From our position we could see it all. In advance Sickles pushed forward his heavy line of skirmishers, who drove back those of the enemy, across the Emmitsburg road, and thus cleared the way for the main body. The Third Corps now became the absorbing object of interest of all eyes. The Second Corps took arms; and the First Division of this corps was ordered to be in readiness to support the Third Corps, should circumstances render support necessary. As the Third Corps was the extreme left of our line, as it advanced, if the enemy was assembling to the west of Round Top with a view to turn our left, as we had heard, there would be nothing between the left flank of the corps and the enemy; and the enemy would be square upon its flank by the time it had attained the road. So when this advance line came near the Emmitsburg road, and we saw the squadrons of cavalry mentioned come dashing back from their position as flankers, and the smoke of some guns, and we heard the reports, away to Sickles' left, anxiety became an element in our interest in these movements. The enemy opened slowly at first, and from long range; but he was square upon Sickles' left flank. General Caldwell was ordered at once to put his division—the First of the Second Corps, as mentioned—in motion, and to take post in the woods at the west slope of Round Top, in such a manner as to resist the enemy should he attempt to come around Sickles' left and gain his rear. The division moved as ordered, and disappeared from view in the woods, towards the point indicated, at between two and three o'clock p. m., and the reserve brigade—the First, Colonel Heath temporarily commanding—of the Second Division was thereupon moved up, and occupied the position vacated by the Third Division. About the same time the Fifth Corps could be seen marching by the flank from its position on the Baltimore Pike, and in the opening of the woods heading for the same locality where the First Division of the Second Corps had gone. The Sixth Corps had now come up, and was halted upon the Baltimore Pike. So the plot thickened. As the enemy opened upon Sickles with his batteries, some five or six in all,

firing slowly, Sickles, with as many, replied, and with much more spirit. The artillery fire became quite animated, soon; but the enemy was forced to withdraw his guns farther and farther away, and ours advanced upon him. It was not long before the cannonade ceased altogether, the enemy having retired out of range, and Sickles, having temporarily halted his command, pending this, moved forward again to the position he desired, or nearly that.

It was now about five o'clock, and we shall soon see what Sickles gained by his move. First we have more artillery firing upon Sickles' left—the enemy seems to be opened again; and as we watched, their batteries seem to be advancing there. The cannonade is soon opened again, and with great spirit upon both sides. The enemy's batteries press those of Sickles, and pound the shot upon them, and this time they in turn begin to retire to positions nearer the infantry. The enemy seems to be fearfully in earnest, this time. And what is more ominous than the thunder or the shot of his advancing guns, this time, in the intervals between his batteries, far to Sickles' left, appear the long lines and the columns of their infantry, now unmistakably moving out to the attack. The position of the Third Corps became at once one of great peril, and it is probable that its commander by this time began to realize his true situation. All was astir now on our crest. Generals and their staffs were galloping hither and thither; the men were all in their places, and you might have heard the rattle of ten thousand ramrods, as they drove home and "thugged" upon the little globes and cones of lead. As the enemy was advancing upon Sickles' flank, he commenced a change, or at least a partial one, of front, by swinging back his left and throwing forward his right, in order that his lines might be paralled to those of his adversary, his batteries meantime doing what they could to check the enemy's advance; but this movement was not completely executed before new batteries opened upon Sickles' right flank—his former front—and in the same quarter appeared their infantry also.

Now came the dreadful battle picture, of which we for a time could be but spectators. Upon the front and right flank of Sickles came sweeping the infantry of Longstreet and Hill. Hitherto there had been skirmishing and artillery practice—now

the battle begins; for amid the heavier smokes and longer tongues of flame of the batteries, now began to appear the countless flashes, and the long, fiery sheets of the muskets, and the rattle of the volleys mingled with the thunder of the guns. We see the long gray lines come sweeping down upon Sickles' front, and mix with the battle smoke; now the same colors emerge from the bushes and orchards upon his right, and envelop his flank in the confusion of the conflict. Oh, the din and the roar of these thirty thousand wolf-cries of the enemy! What a hell is there down that valley! These ten or twelve thousand men of the Third Corps fight well, but it soon becomes apparent that they must be swept from the field, or perish there where they are doing so well, so thick and overwhelming a storm of the enemy's fire involves them. But these men, such as ever escape, must come from that conflict as best they can. To move down and support them there with other troops is out of the question, for this would be to do as Sickles did, to relinquish a good position, and advance to a bad one. There is no other alternative—the Third Corps must fight itself out of its position of destruction! What was it ever put there for?

In the meantime some other dispositions must be made to meet the enemy, in the event that Sickles is overpowered. With this corps out of the way, the enemy would be in a position to advance upon the line of the Second Corps, not in a line parallel with its front, but they would come obliquely from the left. To meet this contingency the left of the Second Division of the Second Corps is thrown back slightly, and two regiments, the Fifteenth Massachusetts—Colonel Ward—and the Eighty-second New York—Lieutenant Colonel Horton—are advanced down to the Emmitsburg road, to a favorable position nearer us than the fight has yet come, and some new batteries from the artillery reserve are posted upon the crest near the left of the Second Corps. This was all General Gibbon could do. Other dispositions were made, or were now being made, upon the field, which I shall mention presently. The enemy is still giving Sickles fierce battle—or rather the Third Corps, for Sickles has been borne from the field minus one of his legs, and General Birney now commands—and we of the Second Corps, a thousand yards away, with our guns and men, are, and must be, idle spectators of the

fight. The enemy, as anticipated, tries to gain the left of the Third Corps, and for this purpose is now moving into the woods at the west of Round Top. We knew what he would find there. No sooner had the enemy gotten a considerable force into the woods mentioned, in the attempted execution of his purpose, than the roar of the conflict was heard there also. The Fifth Corps and the First Division of the Second were there at the right time, and promptly engaged him; and then, too, the battle soon became general and obstinate. Now the roar of battle has become twice the volume that it was before, and its rage extends over more than twice the space. The Third Corps has been pressed back considerably, and the wounded are streaming to the rear by hundreds, but still the battle there goes on, with no considerable abatement on our part. The field of actual conflict was now from a point to the front of the left of the Second Corps, away down to the front of Round Top, and the fight rages with the greatest fury. The fire of artillery and infantry and the yells of the enemy fill the air with a mixture of hideous sounds.

When the First Division of the Second Corps first engaged the enemy, for a time it was pressed back somewhat, but under the able and judicious management of General Caldwell, and the support of the Fifth Corps, it speedily ceased to retrograde, and stood its ground; and then there followed a time, after the Fifth Corps became well engaged, when from appearances we hoped the troops already engaged would be able to check entirely, or repulse, the further assault of the enemy. But fresh bodies of the enemy continued to advance out of the woods to the front of the position of the Third Corps, and to swell the numbers of the assailants of this already hard pressed command. The men there begin to show signs of exhaustion—their ammunition must be nearly expended—they have now been fighting more than an hour, and against greatly superior numbers. From the sound of the fighting at the extreme left, and the place where the smoke rises above the tree-tops there, we know that the Fifth Corps is still steady, and holding its own there; and as we see the Sixth Corps now marching and near at hand to that point, we have no fears for the left—we have more apparent reason to fear for

ourselves. The Third Corps is being overpowered—here and there its lines begin to break—the men begin to pour back to the rear in confusion—the enemy are close upon them and among them—organization is lost, to a great degree—guns and caissons are abandoned and in the hands of the enemy—the Third Corps, after a heroic but unfortunate fight, is being literally swept from the field. That corps gone, what is there between the Second Corps and those yelling masses of the enemy? Do you not think that by this time we began to feel a personal interest in this fight? We did, indeed. We had been mere observers of all this—the time was at hand when we must be actors in this drama.

Up to this hour General Gibbon had been in command of the Second Corps, since yesterday, but General Hancock, relieved of his duties elsewhere, now assumed command. Five or six hundred yards away the Third Corps was making its last opposition; and the enemy was hotly pressing his advantage there, and throwing in fresh troops whose line extended still more along our front, when Generals Hancock and Gibbon rode along the lines of their troops; and at once cheer after cheer rang out along the line, above the roar of battle, for "Hancock" and "Gibbon," and our "Generals." These were good. Had you heard their voices, you would have known these men would fight. Just at this time we saw another thing that made us glad: we looked to our rear, and there, and all up the hillside, which was the rear of the Third Corps before it went forward, were rapidly advancing large bodies of men from the extreme right of our line of battle, coming to the support of the part now so hotly pressed. There was the whole Twelfth Corps, with the exception of about one brigade, that is, the larger portions of the divisions of Generals Williams and Geary, the Third Division of the First Corps—General Doubleday—and some other brigades from the same corps; and some of them were moving at the double quick. They formed lines of battle at the foot of the hill by the Taneytown road, and when the broken fragments of the Third Corps were swarming by them towards the rear, without halting or wavering they came swiftly up, and with glorious old cheers, under fire, took their places on the crest in line of battle to the left of the Second Corps. Now Sickles' blunder is repaired.

The battle still rages all along the left, where the Fifth Corps is, and the west slope of Round Top is the scene of the conflict; and nearer us there was but short abatement as the last of the Third Corps retired from the field, for the enemy is flushed with his success—he has been throwing forward brigade after brigade, and division after division, since the battle began, and his advancing line now extends almost as far to the right as the right of the Second Division of the Second Corps. The whole slope in our front is full of them; and in various formation, in line, in column, and in masses which were neither, with yells, and thick volleys, they are rushing towards our crest. The Third Corps is out of the way. Now we are in for it. The battery men are ready by their loaded pieces. All along the crest is ready. Now Arnold and Brown—now Cushing and Woodruff and Rhorty! You three shall survive to-day! They drew the cords that move the friction primers, and gun after gun, along the batteries, in rapid succession, leaped where it stood, and bel-
lowed its canister upon the enemy. The enemy still advance. The infantry open fire—first the two advance regiments, the Fifteenth Massachusetts and the Eighty-second New York, then here and there throughout the length of the long line at the points where the enemy comes nearest, and soon the whole crest, artillery and infantry, is one continued sheet of fire. From Round Top to near the Cemetery stretches an uninterrupted field of conflict. There is a great army upon each side, now hotly engaged.

To see the fight, while it went on in the valley below us, was terrible; what must it be now when we are in it, and it is all around us, in all its fury? All senses, for the time, are dead but the one of sight. The roar of the discharges and the yells of the enemy all pass unheeded; but the impassioned soul is all eyes, and sees all things that the smoke does not hide. How madly the battery men are driving the double charges of canister in those broad-mouthed Napoleons, whose fire seems almost to reach the enemy. How rapidly those long blue-coated lines of infantry deliver their file fire down the slope! But there is no faltering—the men stand nobly to their work. Men are dropping, dead or wounded, on all sides, by scores and by hundreds; and the poor mutilated creatures, some with an arm dangling, some with a leg broken by a bullet, are limping and crawling towards the rear.

They make no sound of complaint or pain, but are as silent as if dumb and mute. A sublime heroism seems to pervade all, and the intuition that to lose that crest, all is lost. How our officers in the work of cheering on and directing the men are falling! We have heard that General Zook and Colonel Cross, in the First Division of our corps, are mortally wounded—they both commanded brigades—now near us Colonel Ward of the Fifteenth Massachusetts—he lost a leg at Ball's Bluff—and Lieutenant-Colonel Horton of the Eighty-second New York, are mortally struck while trying to hold their commands, which are being forced back; Colonel Revere, Twentieth Massachusetts, grandson of old Paul Revere, of the Revolution, is killed, Lieutenant-Colonel Max Thoman, commanding Fifty-ninth New York, is mortally wounded, and a host of others that I cannot name. These were of Gibbon's division. Lieutenant Brown is wounded among his guns—his position is a hundred yards in advance of the main line—the enemy is upon his battery, and he escapes, but leaves three of his six guns in the hands of the enemy.

The fire all along our crest is terrific, and it is a wonder how anything human could have stood before it; and yet the madness of the enemy drove them on, clear up to the muzzles of the guns, clear up to the lines of our infantry—but the line stood right in their places. General Hancock with his aides rode up to Gibbon's division, under the smoke. General Gibbon, with myself, was near, and there was a flag dimly visible, coming towards us from the direction of the enemy. "Here, what are these men falling back for?" said Hancock. The flag was no more than fifty yards away, but it was the head of the enemy's column, which at once opened fire with a volley. Lieutenant Miller, General Hancock's aide, fell twice, struck, but the general was unharmed, and he told the First Minnesota, which was near, to drive these people away. That splendid regiment, the less than three hundred that are left out of fifteen hundred that it has had, swings around upon the enemy, gives them a volley in their faces, and advances upon them with the bayonet. The enemy fled in confusion: but Colonel Colville, Lieutenant-Colonel Adams, and Major Downie are all badly, dangerously wounded, and many

of the other officers and men will never fight again. More than two-thirds fell.

Such fighting as this cannot last long; it is now near sundown, and the battle has gone on wonderfully long already. But if we will stop to notice it, a change has occurred. The enemy's cry has ceased, and the men of the Union begin to shout there, under the smoke, and their lines to advance. See, the enemy's lines are breaking! They are in confusion in all our front! The wave has rolled upon the rock, and the rock has smashed it. Let us shout too!

First upon their extreme left the enemy broke, when they had almost pierced our lines; thence the repulse extended rapidly to their right; they hung longest about Round Top, where the Fifth Corps punished them; but in a space of time incredibly short, after they first gave signs of weakness, the whole force of their assault, along the whole line, in spite of waving red flags, and yells, and the entreaties of officers, fled like chaff before the whirlwind, back down the slope, over the valley, across the Emmitsburg road, shattered, without organization, in utter confusion, fugitive into the woods, and victory was with the arms of the Republic. Their great assault, the greatest ever made upon this continent, has been made and signally repulsed, and upon this part of the field the fight of to-day is now soon over. Pursuit was made as rapidly and as far as was practicable; but owing to the proximity of night, and the long distance which would have to be gone over before any of the enemy, where they would be likely to halt, could be overtaken, further success was not attainable to-day. When the rout first commenced, a large number of prisoners, some thousands at least, were captured; almost all their dead, and such of their wounded as could not themselves get to the rear, were within our lines; several of their flags were gathered up, and a good many thousand muskets, some nine or ten guns and some caissons lost by the Third Corps, and the three of Brown's battery—these last were in the enemy's hands but a few minutes—were all safe now with us, the enemy having had no time to take them off.

Not less, I estimate, than twenty thousand men were killed or wounded in this fight. Our own loss must have been nearly half this number—about five thousand in the Third Corps, fully

two thousand in the Second, and I think two thousand in the Fifth; and I think the losses of the First, Twelfth, and the little more than a brigade of the Sixth—all of that corps which was actually engaged—would reach nearly two thousand more. Of course it will never be possible to know the numbers upon either side who fell in this particular part of the general battle, but from the position of the enemy, and his numbers, and the appearance of the field, his loss must have been as heavy as, I think much heavier, than our own; and my estimates are probably short of the actual loss.

The fight done, the sudden revulsions of sense and feeling follow, which more or less characterize all similar occasions. How strange the stillness seems! The whole air roared with the conflict but a moment since—now all is silent; not a gun-shot sound is heard, and the silence comes distinctly, almost painfully, to the senses. And the sun purples the clouds in the west, and the sultry evening steals on as if there had been no battle, and the furious shout and the cannon's roar had never shook the earth. And how look those fields—we may see them before dark—the ripening grain, the luxuriant corn, the orchards, the grassy meadows, and in their midst the rural cottage of brick or wood? They were beautiful this morning. They are desolate now—trampled by the countless feet of the combatants, plowed and scarred by the shot and shell, the orchards splintered, the fences prostrate, the harvests trodden in the mud. And more dreadful than the sight of all this, thickly strewn over all their length and breadth, are the habiliments of the soldier—the knapsacks, cast aside in the stress of the fight, or after the fatal lead has struck; haversacks, yawning with the rations the owner will never call for; canteens of cedar of the men of Jackson, and of cloth-covered tin, of the men of the Union; blankets and trousers, overcoats and caps, and some are blue and some are gray; muskets and ramrods, and bayonets and swords, and scabbards and belts, some bent and cut by shot and shell; broken wheels, exploded caissons, and limber boxes, and dismantled guns; and all these were sprinkled with blood; horses, some dead, a mangled heap of carnage, some alive with a leg shot clean off, or other frightful wound, appealing to you with almost more than brute gaze as you pass; and last, but not least numerous, many thou-

sands of men. And there was no rebellion here now,—the men of South Carolina were quiet by the side of those of Massachusetts, some composed with upturned faces, sleeping the last sleep, some mutilated and frightful, some wretched, fallen, bathed in blood, survivors still, and unwilling witnesses of the rage of Gettysburg.

And yet with all this before them, as darkness came on, and the dispositions were made and the outposts thrown out for the night, the Army of the Potomac was quite mad with joy. No more light-hearted guests ever graced a banquet than were these men as they boiled their coffee and munched their soldier's supper tonight. Is it strange? Otherwise they would not have been soldiers. And such sights as all these will continue to be seen as long as war lasts in the world; and when war is done, then is the end, and the days of the millennium at hand.

The ambulances commenced their work as soon as the battle opened. The twinkling lanterns through the night, and the sun of tomorrow, saw them still with the same work unfinished.

I wish that I could write, that with the coming on of darkness ended the fight of today, but such was not the case. The armies have fought enough today, and ought to sleep tonight, one would think; but not so thought the enemy. Let us see what he gained by his opinion. When the troops, including those of the Twelfth Corps, had been withdrawn from the extreme right of our line, in the afternoon, to support the left, as I have mentioned thereby of course weakening that part of the line so left, Ewell, either becoming aware of the fact or because he thought he could carry our right at all events, late in the afternoon commenced an assault upon that part of our line. His battle had been going on there simultaneously with the fight on the left. He had advanced his men through the woods, and in front of the formidable position lately held by the Twelfth Corps, cautiously, and to his surprise, I have no doubt, found our strong defenses upon the extreme right entirely abandoned. These he at once took possession of, and simultaneously made an attack upon our right flank, which was now near the summit of Culp's Hill, and upon the front of that part of the line. That small portion of the Twelfth Corps which had been left there, and some of the Eleventh Corps, sent to their assistance, did what they could to check the enemy; but could make but feeble resistance to their

overwhelming forces. Matters began to have a bad look in that part of the field; a portion of the First Division of the First Corps was sent them for support, the Sixth Wisconsin among them, and this improved matters. But still, as we had but a small number of men there, all told, the enemy, with their great numbers, were having there too much prospect of success; and it seems that probably, emboldened by this, Ewell had resolved upon a night attack, upon that wing of the army, and was making his disposition accordingly. The enemy had not at sundown actually carried any part of our rifle pits there, save the ones abandoned; but he was getting troops assembled upon our flank, and all together, with our weakness there at that time, matters did not look as we would like to have them. Such was then the position of affairs, when the fight upon our left, that I have mentioned, was done. Under such circumstances it is not strange that the Twelfth Corps, as soon as its work was done upon the left, was quickly ordered back to the right, to its old position. There it arrived in good time; not soon enough, of course, to avoid the mortification of finding the enemy in the possession of a part of the works the men had labored so hard to construct, but in ample time before dark, to put the men well in the pits we already held, and to take up a strong defensible position, at right angles to and in rear of the main line, in order to resist these flanking dispositions of the enemy. The army was secure again. The men in the works would be steady against all attacks in front, as long as they knew that their flank was safe. Until between ten and eleven o'clock at night, the woods upon the right resounded with the discharge of musketry. Shortly after, or about dark, the enemy made a dash upon the right of the Eleventh Corps. They crept up the windings of a valley, not in a very heavy force, but, from the peculiar manner in which this corps does outpost duty, quite unperceived in the dark until they were close upon the main line. It is said—I do not know it to be true—that they spiked two guns of one of the Eleventh Corps' batteries, and that the battery men had to drive them off with their sabres and rammers, and that there was some fearful Dutch swearing on the occasion—"*donner wetter*," among other similar impious oaths, having been freely used. The enemy here were finally repulsed by the assistance of Colonel Carroll's brigade of the Third Division

of the Second Corps, and the One Hundred and Sixth Pennsylvania, from the Second Division of the same corps, was, by General Howard's request, sent there to do outpost duty. It seems to have been a matter of utter madness and folly upon the part of the enemy to have continued their night attack as they did, upon the right. Our men were securely covered by ample works, and even in most places a log was placed a few inches above the top of the main breastwork, as a protection to the heads of the men as they thrust out the pieces beneath it to fire. Yet in the darkness the enemy would rush up, clambering over rocks and among trees, even to the front of the works, but only to leave their riddled bodies there upon the ground, or to be swiftly repulsed headlong into the woods again. In the darkness the enemy would climb trees close to the works, and endeavor to shoot our men by the light of the flashes. When discovered a thousand bullets would whistle after them in the dark, and some would hit, and then they would make up their minds to come down.

Our loss was light, almost nothing, in this fight. The next morning the enemy's dead were thick all along this part of the line. Near eleven o'clock the enemy, wearied with his disastrous work, desisted; and thereafter until morning not a shot was heard in all the armies.

So much for the battle. There is another thing I wish to mention of the matters of the 2d of July. After evening came on, and from reports received, all was known to be going satisfactorily upon the right. General Meade summoned his corps commanders to his headquarters for consultation. A consultation is held upon matters of vast moment to the country, and that poor little farmhouse is honored with more distinguished guests than it ever had before, or than it will ever have again, probably. Do you expect to see a degree of ceremony and severe military aspect characterize this meeting, in accordance with strict military rules, and commensurate with the moment of the matters of their deliberation? Name it "Major-General Meade, commander of the Army of the Potomac, with his corps generals, holding a council of war, upon the field of Gettysburg," and it would sound pretty well.—and that was what it was; and you might make a picture of it and hang it up by the

side of "Napoleon and his Marshals," and "Washington and his Generals," may be, at some future time. But for the artist to draw his picture from, I will tell how this council appeared. Meade, Sedgwick, Slocum, Howard, Hancock, Sykes, Newton, Pleasanton (commander of the cavalry), and Gibbon were the generals present. Hancock, now that Sickles is wounded, has charge of the Third Corps, and Gibbon again has the Second. Meade is a tall, spare man, with full beard, which with his hair, originally brown, is quite thickly sprinkled with gray, has a Romanish face, very large nose, and a white large forehead, prominent and wide over the eyes, which are full and large and quick in their movements, and he wears spectacles. His *fibres* are all of the long and sinewy kind. His habitual personal appearance is quite careless and it would be rather difficult to make him look well dressed. Sedgwick is quite a heavy man—short, thick-set and muscular, with florid complexion, dark, calm, straight-looking eyes, rather full, heavyish features, which, with his eyes, have plenty of animation when he is aroused. He has a magnificent profile, well cut, with the nose and forehead forming almost a straight line, curly, short chestnut hair and full beard, cut short, with a little gray in it. He dresses carelessly, but can look magnificently when he is well dressed. Like Meade, he looks and is honest and modest. You might see at once why his men, because they love him, call him "Uncle John"—not to his face of course, but among themselves. Slocum is small, rather spare, with black, straight hair and beard, which latter is unshaven and thin; large, full, quick, black eyes, white skin, sharp nose, wide cheek bones and hollow cheeks, and small chin. His movements are quick and angular, and he dresses with a sufficient degree of elegance. Howard is medium in size, has nothing marked about him, is the youngest of them all, I think; has lost an arm in the war, has straight brown hair and beard, shaves his short upper lip, over which his nose slants down, dim blue eyes, and on the whole appears a very pleasant, affable, well-dressed gentleman. Hancock is the tallest and most shapely, and in many respects is the best looking officer of them all. His hair is very light brown, straight and moist, and always looks well; his beard is of the same color,

of which he wears the moustache and a tuft upon the chin; complexion ruddy, features neither large nor small, but well cut, with full jaw and chin, compressed mouth, straight nose, full, deep blue eyes, and a very mobile, emotional countenance. He always dresses remarkably well, and his manner is dignified, gentlemanly, and commanding. I think if he were in citizen's clothes and should give commands in the army to those who did not know him, he would be likely to be obeyed at once, and without any question as to his right to command. Sykes is a small, rather thin man, well dressed and gentlemanly, brown hair and beard which he wears full, with a red, pinched, rough-looking skin, feeble blue eyes, large nose, with the general air of one who is weary and a little ill-natured. Newton is a well-sized, shapely, muscular, well-dressed man, with brown hair, with a very ruddy, clean-shaved, full face, blue eyes, blunt, round features, walks very erect, curbs in his chin, and has somewhat of that smart sort of swagger that people are apt to suppose characterizes soldiers. Pleasanton is quite a nice looking dandy, with brown hair and beard; a straw hat with a little jockey rim, which he cocks upon one side of his head, with an unsteady eye that looks slyly at you and then dodges. Gibbon, the youngest of them all, save Howard, is about the same size as Slocum, Howard, Sykes and Pleasanton, and there are none of these who will weigh one hundred and fifty pounds. He is compactly made, neither spare nor corpulent, with ruddy complexion, chestnut brown hair, with a clean-shaved face, except his moustache, which is decidedly reddish in color; medium-sized, well-shaped head, sharp, moderately jutting brows, deep blue, calm eyes, sharp, slightly aquiline nose, compressed mouth, full jaws and chin, with an air of calm firmness in his manner. He always looks well dressed. I suppose Howard about thirty-five, and Meade about forty-five years of age; the rest are between these ages, but not many are under forty. As they come to the council now there is the appearance of fatigue about them, which is not customary, but is only due to the hard labors of the past few days. They all wear clothes of dark blue, some have top boots and some not, and except the two-starred strap upon the shoulders of all save Gibbon, who has but one star, there was scarcely a piece of regulation uniform about them all.

They wore their swords, of various patterns, but no sashes; the army hat, but with the crown pinched into all sorts of shapes, and the rim slouched down and shorn of all its ornaments but the gilt band—except Sykes, who wore a blue cap, and Pleasanton with his straw hat, with broad black band. Then the mean little room where they met; its only furniture consisted of a large, wide bed in one corner, a small pine table in the centre, upon which was a wooden pail of water, with a tin cup for drinking, and a candle stuck to the table by putting the end in tallow melted down from the wick, and five or six straight-backed, rush-bottomed chairs. The generals came in; some sat some kept walking or standing, two lounged upon the bed, some were constantly smoking cigars. And thus disposed, they deliberated, whether the army should fall back from its present position to one in rear which it was said was stronger; should attack the enemy on the morrow, wherever he could be found; or should stand there upon the horseshoe crest, still on the defensive, and await the further movements of the enemy. The latter proposition was unanimously agreed to. Their heads were sound. The Army of the Potomac would just halt right there, and allow the enemy to come up and smash his head against it, to any reasonable extent he desired—as he had today. After some two hours this council dissolved, and the officers went their several ways.

Night, sultry and starless, droned on; and it was almost midnight that I found myself peering my way from the line of the Second Corps, back down to the general headquarters, which were an ambulance in the rear, in a little peach orchard. All was silent now but the sound of the ambulances as they were bringing off the wounded; and you could hear them rattle here and there about the field, and see their lanterns. I am weary and sleepy, almost to such an extent as not to be able to sit on my horse. And my horse can hardly move—the spur will not start him. What can be the reason? I know that he has been touched by two of their bullets today, but not to wound or lame him to speak of. Then, in riding by a horse that is hitched, I get kicked. Had I not a very thick boot, the blow would have been likely to have broken my ankle; it did break my temper as

it was, and, as if it would cure matters, I foolishly spurred my horse again. No use—he would only walk. I dismounted; I could not lead him along at all, so, out of temper, I rode at the slowest possible walk to the headquarters, which I reached at last. Generals Hancock and Gibbon were asleep in the ambulance. With a light I found what was the matter with “Billy.” A bullet had entered his chest just in front of my left leg as I was mounted, and the blood was running down all his side and leg, and the air from his lungs came out of the bullet-hole. I begged his pardon mentally for my cruelty in spurring him, and should have done so in words if he could have understood me. Kind treatment as is due to the wounded he could understand, and he had it. Poor Billy! He and I were first under fire together, and I rode him at the Second Bull Run, and the First and Second Fredericksburg, and at Antietam after brave “Joe” was killed; but I shall never mount him again. Billy’s battles are over.

“George, make my bed here upon the ground, by the side of this ambulance. Pull off my sabre and my boots—that will do!” Was ever princely couch, or softest down, so soft as those rough blankets, there upon the unroofed sod? At midnight they received me for four hours’ delicious, dreamless oblivion of weariness and of battle. So, to me, ended the 2d of July.

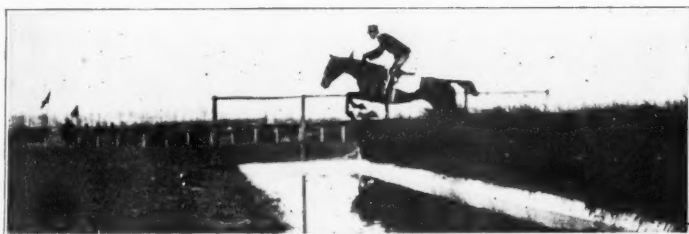
[*To be Continued.*]

THE INTERNATIONAL CONCOURS HIPPIQUE.

BY CAPTAIN W. C. SHORT, THIRTEENTH CAVALRY.

(Held at Rome, Italy, April 29 to May 5, 1908.)

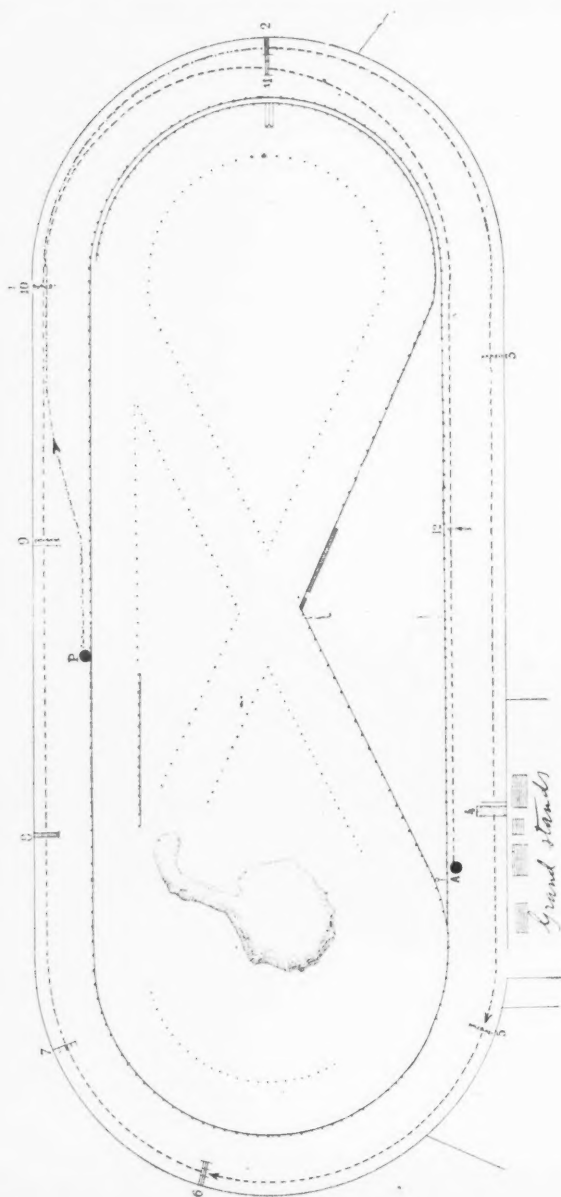
The Concours was held at the Toro de Quinto, the Post Graduate School of Equitation of the Italian Army, which is located just outside of Rome. All of the contests of this Concours were confined to officers' chargers and were open to the officers of all nations. It was originated and conducted under the orders and supervision of the King of Italy and his War Department and was carried on with great formality and splendor. The expenses of all contestants, both foreign and Italian, were paid by the Italian government.



THE WATER JUMP.

The ditch is about fifteen feet wide.

The grand hippodrome belonging to the Cavalry School is equipped with all the requirements for such an exhibition, such as obstacles, turf track, grand stands, including a royal pavilion, etc. No more ideal place could be found for the purpose, and even this great amphitheater was not large enough to accommodate the immense crowds that came each day to witness these rides. No greater proof is needed of the interest taken by the Italians, from the highest to the lowest, in equitation.

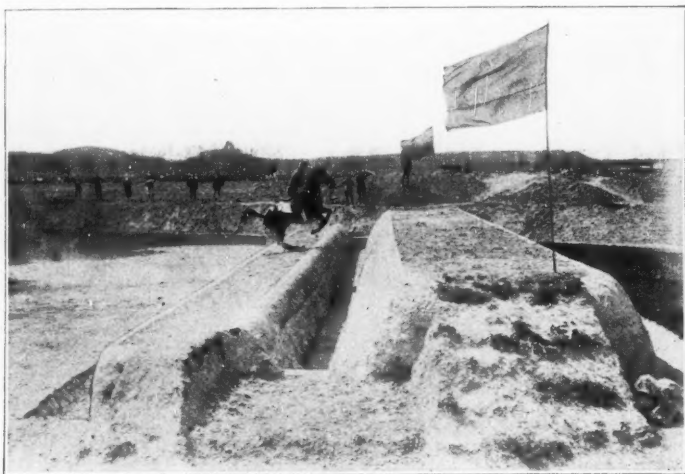


STEEPLE CHASE TRACK OF TORO DE QUINTO.

The dotted line from P to A indicates the route of the second trial which took place one and one half hours after the ride of thirty-one and one quarter miles. Distance 3,227 yards; time allowance six and one-half minutes.

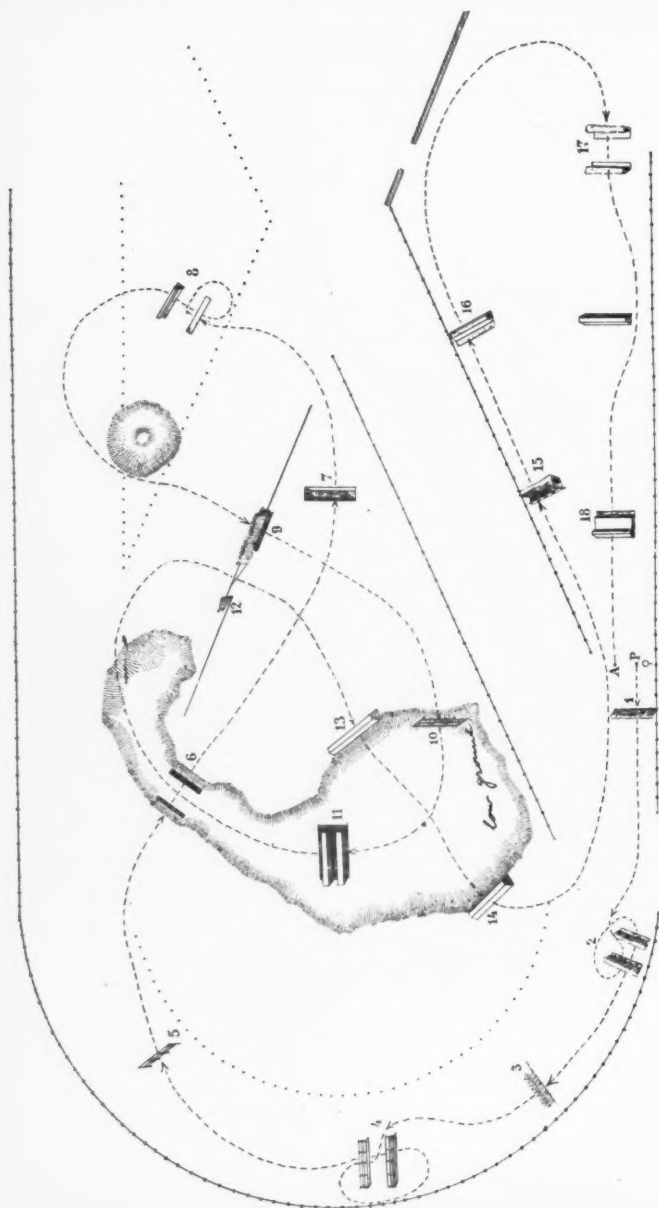
It is not necessary to go into the details of the steeplechases, high jumping, long jumping, etc., as these are the same the world over, but I will try to give an idea of the severe tests demanded for the "Championship of Officers' Chargers." The contest had for its object the finding the horse with the greatest endurance, bravery, calmness and training.

There were 103 contestants as follows: Ninety-two Italians, seven Belgians, one Russian, one Spaniard, one Roumanian and one from the Argentine Republic. The few contestants from the foreign nations is due to the fact that the Italians made the conditions so difficult on account of the special obstacles used and which required a certain amount of prior special training and also because of the short time between the issuance of the programs and conditions and the date of the Concours that there was not sufficient time to get the horses in readiness. It is to be remembered that the training season in Italy is during the winter while further north it is in the spring. However, all the European nations sent military commissions as observers.



OBSTACLE No. 11.

On account of the great number of contestants, they were divided into two groups. The first test for the first group commenced promptly at seven o'clock, a. m., April 29th, and at in-



TRACK FOR THE THIRD AND FINAL TRIAL.

The dotted line from P to A indicates the course which was 2734 yards. The time allowance was six minutes and fifteen seconds. The obstacles at 2, 4, 6, 8 and 17 were crossings of roads enclosed by different kinds of fences.

tervals of seven minutes each contestant was started out by himself on a ride of thirty-one and one-fourth miles, to follow a route marked on a map and at certain points, indicated on the map, he was required to leave the road and follow a flagged course of six and one-fourth miles with natural obstacles, such as fences, stone walls, creeks, steep descents, etc., etc. They rode with packed saddles and each officer carried his arms.

Four hours were allowed in which to make this ride.



A FALL AT OBSTACLE NO. 11.

This officer, like all others who met with similar accidents, mounted his horse after the fall and made him take the obstacle.

Judges were stationed at all obstacles in the country and the judges at the finish were required to forbid any horse from taking any further part in the contests if he was not in good condition at the completion of this test, even if he had covered the distance within the required time.

All horses which had successfully completed this trial of the morning were required, after five hours and thirty minutes from

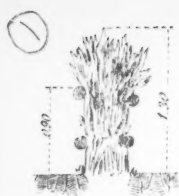
their first departure (not from their return, thus allowing one hour and thirty minutes rest), to gallop over a course of nearly four thousand yards and take twelve obstacles on the hippodrome turf track. Six minutes and thirty seconds were allowed for this trial. The equipment for this trial was the English saddle and undress uniform without arms. A refuse at an obstacle was penalized by the loss of two points and a fall by five points.



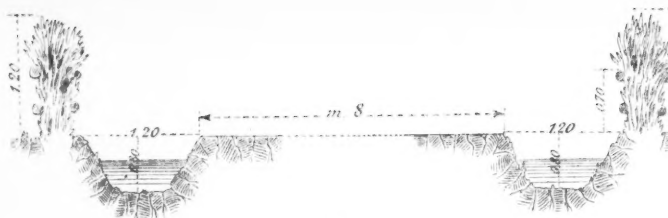
OBSTACLE No. 16.
Stone Wall and Ditch.

On the following afternoon, the third trial of these same horses took place, only those who had successfully completed the two preceding tests being allowed to take part. In this third trial, they were required to gallop over a distance of about twenty-seven hundred yards with eighteen very difficult obstacles and with many tortuous turns. Six minutes and fifteen seconds were allowed for covering this course. To strike the obstacles or to put two feet in a ditch was penalized by the loss of two points.

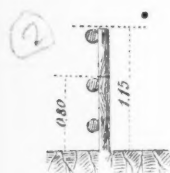




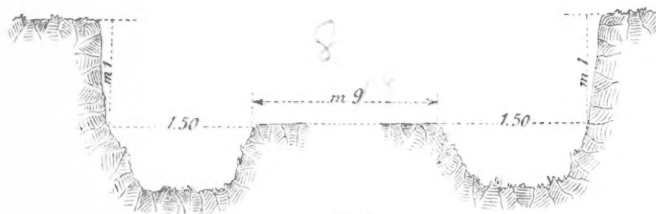
Obstacle N. 1



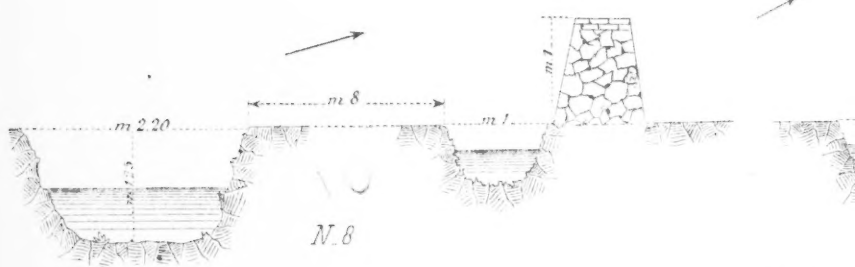
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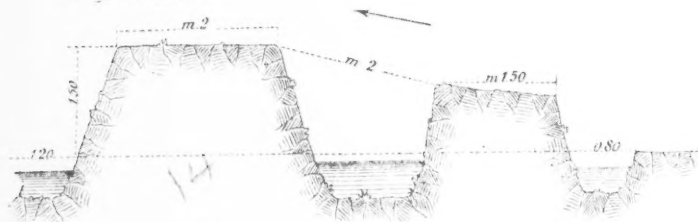
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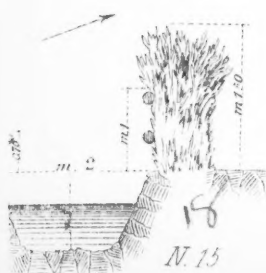
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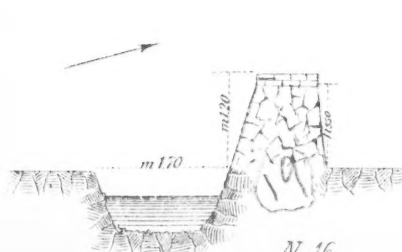
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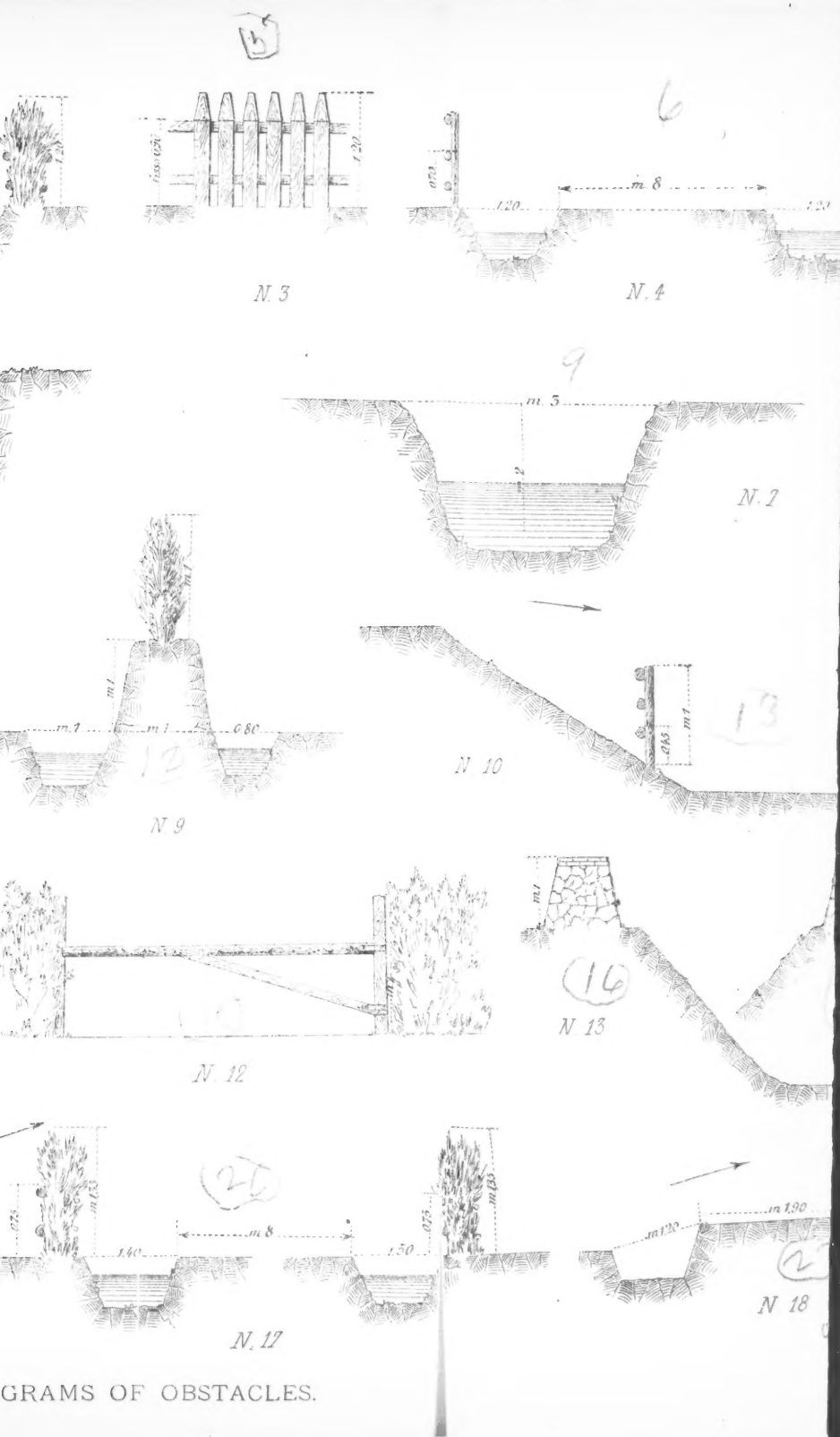
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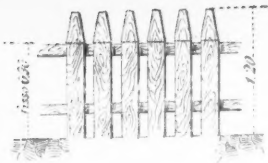
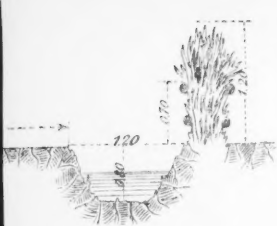
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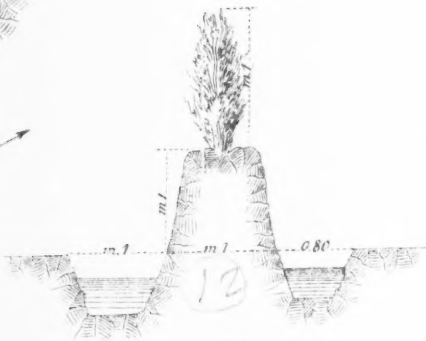
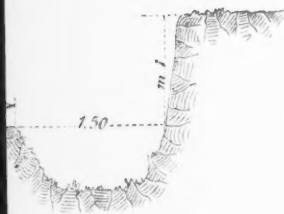
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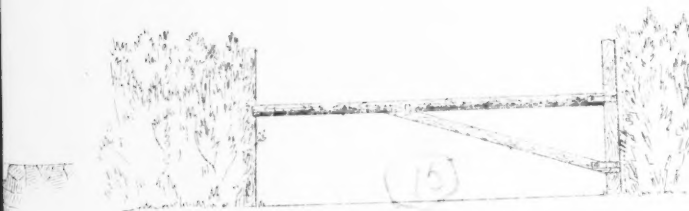
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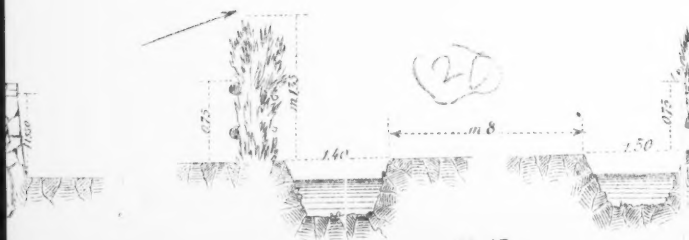
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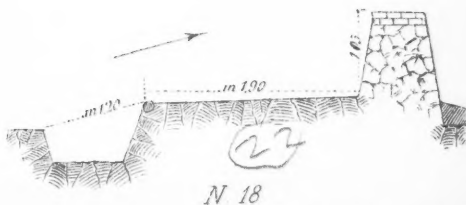
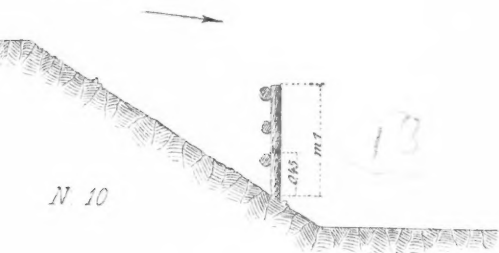
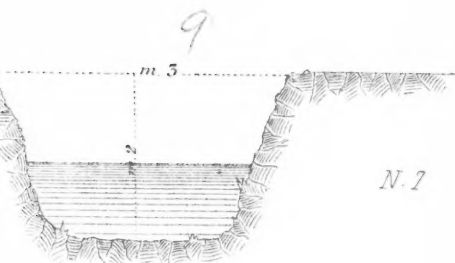
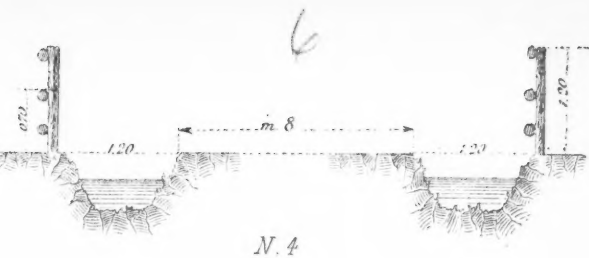
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16

DIAGRAMS OF OBSTACLES.

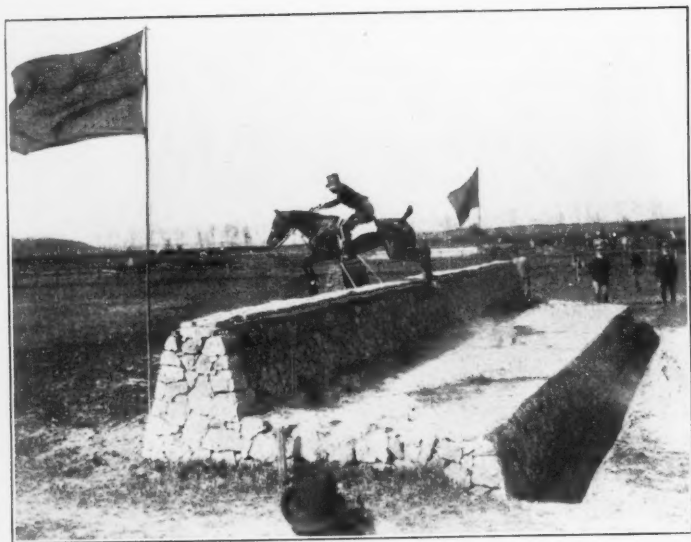


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OBSTACLE No. 15.



OBSTACLE No. 18.

The penalty for a refuse or a fall was the same as in the preceding trial.

These three trials constituted the requirements for the "Championship." The second group commenced the same program on the morning of the third day.

The number of officers who completed these three trials within the required time and who completed all the tests with more or less success were forty-nine, which was remarkable.

After the classification had been made, it was found that



THE SPANISH OFFICER WHO CAME OUT SECOND.

In the program this horse is noted as Irish but he is Anglo-Norman and was trained at Saumur by a French officer.

one Italian and the Spanish officer were the only ones who had made perfect performances and consequently it was necessary to put them through an additional trial. This additional test consisted in putting narrow obstacles in a zigzag course between two marked lines and the horses were required to remain within the lines although a very fast gait was required. The Italian's horse went over this course without a fault but that of the Spaniard rapped his hind foot on the stone wall and so lost the first place.

The prizes for this Concours were four thousand dollars



THE LONG JUMP.

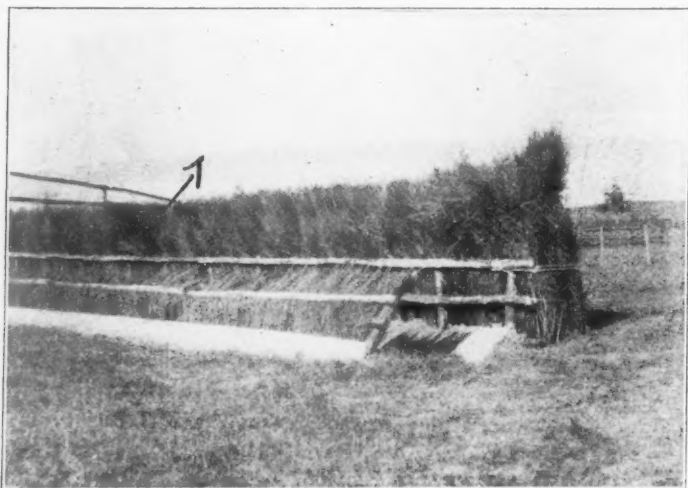
The jump is wider than the cut indicates. I was unable to measure it but it was the longest I ever saw a horse make. W. C. S.



STONE WALL AND DITCH.

given by the King of Italy and objects of art of value presented by different sovereigns, including those of Germany, Austria and France. The four thousand dollars were divided proportionately between the first sixteen winners.

I watched the horses on the road near the finish of the thirty-one and a quarter miles ride and found that a majority of them came through in splendid condition, showing that the conditioning of horses is well understood even by the Second Lieutenants. Some of the horses even came in without having turned a hair and some had been carefully brushed up by their riders in



some secluded spot beside the road before arriving at the finish. It must also be remembered that some of the riders were very large men. Many of them came in before the four hours were up, thus gaining more time to feed and freshen their horses before the second test of the afternoon.

The horses were nearly all Irish and very excellent animals, costing from six hundred dollars up to in the thousands. There were a few thoroughbreds and one Anglo Arab.

There was comparatively little falling, considering the number of contestants and the severity of the tests but this is ex-

plained by the fact that all were mounted on superb, highly trained horses and that all were men of splendid courage.

The third trial of taking the eighteen difficult obstacles was very exciting and the most prejudiced person could not withhold his enthusiastic admiration for the courage of the riders and horses. Those who had the bad luck to fall were back in their saddles immediately, if they were conscious, and pushing on with greater speed to make up for lost time. It must have been a great satisfaction to the King of Italy, who watched every event with great interest, to see what gritty, courageous officers he had in case he had need for them. The common people who were looking on were among the first to recognize the courage of these officers and to applaud them with great enthusiasm.

There are people who may ask, what is the use of all this. It is simply because the officer learns to care for his horse, to know how much he can demand from him and to have the courage to demand it. This horsemanship is dangerous work but the officer gets accustomed to the danger and soon learns to like it so that the time when he needs courage, in time of battle, he has it and is prepared to set the example to his men. Another very important feature which figures in the life of an officer who rides horses is that he soon learns that he must be and remain in the same condition as his horse. He finds that late hours and dissipation do not fit him for such work, do not go well with a vigorous horse and he finds he must give up one or the other.

It is believed that all would prefer to see our officers spending their time on horseback than to see them sitting around the club. The officers of the mounted services of foreign armies are, almost without exception, magnificent horsemen and are very moderate in their habits. When you see an officer abroad who is an excellent horseman, nine times out of ten it will be found that he is a cold water man.

The experience that the officer gets in making horsemanship his pastime as well as his work, shows on the training and condition of foreign troops of cavalry.

In this Concours, the French officers were refused permission by their government to enter the contest for the "Championship of the Charger," but were allowed to enter the inter-

national, "free for all" steeplechase and took away with them all the money.



DESCENT OF A VERY STEEP BANK.

The illustration is true to life and such descents are frequently practiced at the school. It is really less difficult to perform than it appears. They first commence practicing their horses on reasonable hills, but finally make them take this descent. The ground is well adapted for this work as the horses get a good foot hold. The practice is injurious to the horses.

MACHINE GUNS WITH CAVALRY.

BY MAJOR J. E. REYNOLDS LANDIS, MAJOR, SIXTH CAVALRY.

In the Italian cavalry maneuvers near Udine in September, 1908, (at first, one brigade of cavalry, later, one division of cavalry operating against another) experiments were made in the employment of machine guns. These guns were Maxim machine guns, without shields, packed on horses. Two of them constituted a platoon, which also included 1 officer, 23 men and 34 horses. The ammunition, except the first supply for the firing line, was transported on carts.

The experiments were confined to the use of machine gun platoons attached to brigades, instead of to regiments, but did not include uniting platoons in a group under command of an officer of higher rank than a lieutenant.

On the march, the guns having been experimentally placed in different parts of the column, it was found advisable, when the advance guard was not very strong, to place these guns at the head of the main body. If in rear of that body, they could not be brought into action, even at most rapid gaits, until the opposing main bodies had come into contact. If placed with a small advance guard they were considered too exposed to loss. At night it was considered best to keep them in the midst of the main body.

In action, special conditions were considered as warranting the use of the guns separately though the application of the principle that the guns should be kept together was found to give the best results.

When the platoon had taken up an advanced position, it was found advisable to have a portion of the escort dismount so as to be in readiness to make use of fire action.

No definite deductions seem to have been made as to the method by which the escort could best fulfill its mission with the

guns or as to its position with respect to the guns, but difficulty was sometimes had with led horses that were unaccustomed to machine gun fire.

The following ideas, advanced by Captain Viktorin, set forth an organization for these guns, and a method of employment of them and their escort that may well engage our serious attention, illustrated as they are by such practical examples.

* * *

Extracts from "Examples of the Employment of Machine Guns With Cavalry" by Captain Roberto Segre, General Staff, Italian Army in the *Rivista di Cavalleria*, May 1909, translated by Major J. F. R. Landis, Sixth Cavalry.

The group of machine guns with Austrian cavalry is made up of two platoons, each including two Schwarzlose machine guns which are a little lighter than the ordinary Maxim.

Each gun is served by three men, including the gunner, has two men to bring up ammunition, and is transported by four horses (one carrying the gun and 500 cartridges, and three carrying 1,500 cartridges each). Taking into consideration the four men leading the horses, there are with each machine gun 9 men and 13 horses.

Each platoon is under the orders of a lieutenant who has with him one range taker, two orderlies, a sergeant-major, and an armorer; the platoon includes also a caisson drawn by six horses, and two spare horses (one of the latter being ridden).

The group is commanded by a company officer (usually a captain), accompanied by a trumpeter, and the two caissons are in charge of a non-commissioned officer. The total for the group is therefore 3 officers, 59 men, 83 horses, and 2 caissons.

The group is directly under the orders of the commander of the cavalry unit to which it is attached; that is, usually, a Division Commander; sometimes a Brigade Commander; exceptionally a Regimental Commander. This system corresponds to the tendency to keep machine guns at the disposition of officers commanding larger units; a tendency which is evident in the very regulations for the drill of groups of machine guns with cavalry.

One group of machine guns (the third) covered about 815 kilometers in five weeks, during four of which it was on the march or in maneuvers.

The saddles had been gone over, one by one, before starting, modifying wherever necessary the stuffing of the pack-saddles so as to leave the withers and backbones of the horses entirely free.

On the march, in addition to the usual halts, after from 15 to 20 kilometers the group halted for three-quarters of an hour during which all the horses were unsaddled in order to allow their backs to cool off; then, having been watered, they were resaddled with the greatest care.

Even in maneuvers endeavor was made to do likewise; and so, in spite of pretty warm weather, of covering more than 800 kilometers, of going into action 64 times, and maneuvering at rapid gaits even over very rough ground, often jumping obstacles, the commander found that the group had not a single horse with a saddle gall.

In marches in the vicinity of the enemy, the group was always kept well to the front. Captain Viktorin, commander of the group, in his report states, "at first the group was employed rather circumspectly and not pushed too far to the front; but very soon all were convinced of its qualities of mobility and of rapidity in coming into action; so that it was always placed with the main body of the advance guard or was assigned to detachments that were to operate against the flanks of the adversary or were to be employed in making demonstrations." Then he adds that machine guns in a cavalry column can never be put too far forward, because if, in case of an encounter with hostile cavalry, they should have to be brought up from the rear, though they should employ very fast gaits, they would never make up the precious time that would have been lost. On the other hand, the danger of losing them is not real; so small and mobile a nucleus as is the firing group can always easily find for itself a way out of any critical situation. Sometimes, in fact, the employment of the group was more than audacious, it was rash; and proof of this is the frequency with which the group was used in the charge.

The horse that carries the gun carries also 500 cartridges; therefore the firing group may be made up of four of these horses, with the corresponding four leaders, and of 16 men. Considering also the 3 officers and the other men attached (non-commissioned officers, trumpeters, and orderlies) we obtain thus a nucleus of 33 men (28 sabers, taking into account the horse leaders) which differs from an ordinary cavalry platoon only by the four led horses.

Captain Viktorin states that in difficult situations he always used to advance with the firing group only, formed as above explained, leaving the horses carrying ammunition with the caissons of the horse artillery. The 500 cartridges per gun seemed to him sufficient for a first supply; and he remarks that a detachment so small may readily take advantage of the terrain and therefore much more easily reach firing positions, all unknown to the enemy. At most Captain Viktorin admits that there should be included, under such circumstances, in the firing group one horse carrying ammunition; with this, the first supply of the group becomes 3,500 cartridges.

In addition, this composition of the group has the advantage that it is not necessary to worry about what may happen in critical situations. Especially in combats between bodies of cavalry, with their rapidly changing phases, circumstances may arise in which the group, when moving, has not time enough to unpack in order to repulse with fire a charge of the enemy, even though for this a very short time is necessary, 25 seconds according to Captain Viktorin. At such a time those 30 odd horses, with only four led horses, can draw saber and charge in close order, the guns behind the line; and if the charge is carried out with decision there is great probability not only of avoiding the complete destruction of the group, but even of getting it out of a critical situation with very slight losses.

In fact the group did charge several times. In the maneuver of the 11th of September there were two charges. In the beginning of the action the commander of the group, who had only three machine guns with him because the fourth had been pushed forward with a reconnoitering detachment, having caught sight of an opposing infantry detachment, at once put a platoon into action and started to place the third gun on top of a hill when he

saw a small detachment of the enemy's cavalry preparing to charge the two guns already in action. Then, without hesitating, he left behind the pack horse and its leader, and with the persons about him and the men of the third machine gun, he unexpectedly attacked and succeeded in repulsing the platoon of the enemy.

Later, while the two bodies of cavalry were getting ready to charge each other, the group was falling back from a position that was too exposed when the commander noticed that the enemy was trying to attack his squadrons in flank. He decided then at once to oppose this attempt by charge, arranging his group, 30 sabers, in three lines (the first formed of officers, trumpeters, and orderlies, the second of the gunners, and the third of the pack animals and the men leading them). But the little squad was ruled out of action because other squadrons of the enemy came up.

Another example of the charge took place at dawn on the 17th of September when the group, with its escort, was pushing ahead of the Division to take position to the south of the bridges at Tacz. While the group, having caught sight of some squadrons of the enemy advancing in the direction of the vineyard where its commander intended to post it, was increasing the gallop to reach the good position, a platoon of the enemy was sent against it. The commander of the group, considering that if he should not charge with the group, he would be constrained to fall back at the gallop and certainly would not be able to get his guns in action before the encounter of the main bodies because the wooded character of the other portions of the terrain rendered it difficult to find a position for machine guns, decided at once to charge the opposing platoon. This latter was, in fact, repulsed by the prompt arrival of the escort and the group succeeded in then taking up position and in operating very effectively against the main body of the opposing cavalry.

It is, however, proper to add that the Austrians themselves made objection to this method of operating.

The group was often employed as an arm by itself. In all armies it is generally held advisable to employ machine guns in couples because a single gun may sometimes not be able to keep up a prolonged fire, either through derangement or through the

rapid heating of the barrel. In fact, with cavalry units, this having to keep up a prolonged fire will not be a usual thing, especially in fights between cavalry; and derangements do not happen so often in modern, improved machine guns.

Therefore this frequent employment as an arm by itself seems to correspond perfectly to the characteristics of a machine gun unit with cavalry.

Captain Viktorin insists several times on the absolute necessity of the horses of the commander of the group, as well as those of the other officers, of the men themselves, and of the pack horses, especially those carrying guns, being the best obtainable.

He remarks that in an encounter between two bodies of cavalry the time that can be used in firing before the machine guns are masked by their own squadrons, or at any rate before the meeting takes place, is so limited that the commander of the group, as soon as the commander of the cavalry has settled upon his own plan of action, must always boldly advance as rapidly as possible to succeed in finding a place where, in time, he can properly bring his machine guns into action; and that the firing group, attentive to his signals, must then come up to him even at full gallop as soon as the position has been chosen.

This time is calculated by seconds, we may say, but we must remember that four machine guns can then easily fire 1,600 shots a minute.

Captain Viktorin remarks that it is well that the escort should not be changed too often. The attention of the personnel of the group is too absorbed in its own fire to be able to pay attention to anything else; the escort must therefore secure it from unpleasant surprises. It would not be doing its work properly if it should remain united alongside of or behind the gun; rather it is probable this would be a cause of injury, because while the group is trying to take advantage of the terrain so as not to be seen by the enemy that group of horsemen would present a large target and would attract the attention of the enemy. Then, acting in this manner, it would frequently not succeed in fulfilling its duty because it would permit surprise by parties of the adversary and in order to oppose them—even if it could succeed in doing so in time—it would then too often mask

the guns, cutting them off from the possibility of making use of their only means of combat, fire action.

The real duty of the escort is to see to it that in the immediate vicinity of the guns—be these in position or on the march—the terrain shall always be scouted.

Captain Viktorin thinks that to attach a group of four machine guns to a large body of cavalry, as is done in Austria, is preferable to attaching a platoon of two guns to each regiment. Especially in actions between cavalry, he remarks, the many machine guns of the regiments would probably only result in deranging the deployment and would hardly succeed in their mission since—in such an encounter—their positions can be only on the flanks of their own troops.

Then, too, it is easier to attach to a regiment a platoon from a group, when that is necessary, than to make a group homogeneous by uniting temporarily two or more platoons; so much the more since it would then always lack a trained commander accustomed to the organization. In addition, we must also consider that the platoons are commanded only by subalterns while the group may be commanded by a captain; by an officer that is, who can best carry on the operations with that initiative which is absolutely necessary.

The first employment of machine guns will take place, for the most part, according to the directions—however brief—of the commander of the cavalry; but when their chief has rapidly and well followed out the instructions of the commander, his mission is very far from being ended. Without awaiting further orders he must promptly fit his own action to the successive rapidly changing aspects of the action between the two bodies of cavalry; must anticipate the intentions of his own commander; must, without hesitation and without delay, act effectively against an adversary who is thinking of withdrawing; must as well, with a rapid glance, note a suitable position which will permit him to stop the pressure of the enemy when the latter has the upper hand.

This opinion is not, however, accepted by all even among the Austrians. Others have expressed the opinion that instead of making of machine guns a fourth arm, a sort of horse artillery

of minor efficacy or a compressed mounted infantry, it would be better employed as an integral part of a regiment, to be detached from the latter only when it is necessary. In conformity with this opinion it has been added, that the system now followed—in that army—leads among other things to a too independent employment such as, in fact, was made of the third group during the maneuvers.

PACK HORSES FOR MACHINE GUNS.

BY FIRST LIEUTENANT FREDERICK J. HERMAN, NINTH CAVALRY.

When the machine gun platoons of the United States Army were organized under the provisions of G. O. No. 112 and 113 W. D., 1906, pack *horses* were prescribed for the transportation of the guns and ammunition of the cavalry platoons. A subsequent order prescribes mules as the pack transport of this service.

In my opinion the horse is the better pack animal for machine guns with the mounted service. This conclusion was reached after two and one-half years' experience with a machine gun platoon, which in that time had three distinct sets of pack mules.

The first of these were selected from the pack train at Fort Riley in 1906, ten good mules of uniform size and color, well broken for the usual work of the pack trains of the army, and sound and of good disposition, that took readily to the work, so far as the carrying of the loads was concerned. The next outfit of mules, received in the Philippines, consisted of old wagon mules that could best be spared by the Quartermaster. These took the loads without protest, but became so frequently disabled and stiff and sore from rapid work, that it became necessary to supplant them with a set of new mules—young, unbroken mules, averaging about $4\frac{1}{2}$ years of age. Much care was exercised in the training of these mules from the very beginning, keeping constantly in view the work required and expected of them in the machine gun service. This included the teaching of a uniform gait and speed to conform to the gaits of the cavalry mounts of the men. After a year's hard and careful work these young mules exhibited the same final results obtained with the trained pack mules and the crow-bait from the wagon trains, viz.: they carried their packs willingly, promptly forgot the drill movements

the day after they had been executed the 50th time or oftener, hung back on their drivers, and invariably showed the obstinacy of their mule-disposition at the most critical moment of any and every maneuver proposition when time was its most important element, and conclusively demonstrated their inability to carry the same or a less weight than the cavalry mounts of the drivers and cannoneers over the same distances in the same time, the pack loads usually carried at drills and competitions being less than those carried by the cavalry horses, the ammunition boxes being, as a rule, empty. This difficulty of keeping the pack mules up with the riders was noted and freely commented upon by many officers who witnessed the competitions of the cavalry machine gun platoons at the Department (Luzon) Athletic and Military Meet in Manila in December, 1908. In these events the mules ran with empty ammunition boxes, and were carrying, approximately, 60 pounds less weight than the horses (except in the cases of the gun mules).

On ordinary practice marches the mules keep up with the horses readily enough, and it is quite true that not so much forage is required to subsist the pack mule as must be provided for the horse, but the difference is not great and there the advantage of the mule in this service ends and is more than counterbalanced by the intelligence, tractability and greater mobility and speed of the horse.

In this connection there exists a very reasonable doubt of the ability of any dismounted machine gun command to meet all the demands that will be made upon it in the next war, because of the fact that such commands are limited in speed to the pace and endurance of the foot soldier, who, no matter how well trained in running, must necessarily arrive at any distance in a physical condition incapacitating him for the most efficient service at that particular time.

The horse can be taught to remember the movements and commands of the drill far better than the mule. The young mules of my platoon have been made to execute certain movements, day after day, for months, at all gaits. These movements were those required in the ordinary and habitual maneuvers of the platoon in close order and in going into action, and had spe-

cial application to the drill programs of coming competitions. In almost every instance, when the periodical tests for time and efficiency were made and these animals were urged to their best efforts, their erratic obstinacy spoiled the test and required it to be gone over again, often repeatedly. At the completion of a special course of training for the Department Meet in Manila in 1908 the men of my platoon and I also, became convinced that the mule as a transport animal for this particular service was unreliable and could be improved upon by the substitution of the horse of suitable conformation.

At one time I turned out one section as an experiment, using the cavalry mounts of the other section as pack animals, and the results were particularly gratifying; the cavalry horses took the loads without trouble, maintained the gaits of the saddle horses as well as their speed, and reduced the best time of a 500-yard service run, including the removal of led animals, by 20 seconds, which was made up in speed and form. It is believed that this time could have been improved upon after more work under the pack saddle. During this experiment the drivers were able to sit up in their saddles and lead their pack horses without special effort, which was a great relief from the arm-racking efforts required with the mules at every gait but the walk, as well as a relief to the saddle horses who were then enabled to carry their riders and equipment with a better balance of weights and without the strain of the back-hanging or resisting mule.

At no time have I seen an intelligent movement originate with any mule in my platoon; often things were done by the mules for which they are usually given credit as intelligence, but to me it simply appeared as a species of low cunning exercised for purely selfish purposes; their every useful move was by the express direction or instigation of their drivers. The whip was absolutely indispensable when the mules were carrying the packs—and at every gait.

The horses, on the contrary, knowing their drill, frequently complied with commands and conformed to movements without touch from whip or rein, or word from driver. And often, when the mules were carrying the packs and a driver was pulled from the saddle by one of these stubborn beasts, his horse would at once retake his place in ranks if free, and keep on with his

section. It was made a rule in the platoon that for neither a loose pack mule, saddle horse, or a man dismounted, was anyone to leave or delay the column—the detached man or animal being required to rejoin as soon as and in the best manner possible. Loose mules always rejoined the column but generally gave trouble in catching them, which was not the case with loose horses.

In a run for position over 500 or 1,000 yards by a machine gun organization, a matter of 15 or 20 seconds or more may be of the utmost importance during an action, and the fate of an engagement may rest upon the fact of the machine guns getting into action at a particular time and place or not; in such event mobility is everything and here the mule would probably fail. The element of chance as represented by the erratic and obstinate mule would necessarily enter into the calculations of the officer directing the maneuver; such element would be eliminated with horses as pack animals.

The gun mule of our machine gun platoons carries about 285 pounds and the ammunition mules approximately 265 pounds, when carrying the war packs with service ammunition; the loads for the ammunition mules for drill and ordinary maneuvers amount to about 155 pounds; the largest and strongest mule is ordinarily selected as the gun mule, but as a rule the large, strong-looking mule seems to go to pieces very soon when fast work is required, and the smaller and tougher pack mule appears to be unable to carry the load without stumbling and an occasional tumble, if the ground is rough and the gait fast. Such is also the case with the average sized pack mule under the ammunition packs with service loads. The saddle horses of the machine gun outfits, with riders equipped for field service in the United States will carry from 240 to 270 pounds according to size of rider. In the colored regiments the latter weight is more often the rule than the exception. In general, however, for garrison drills, the saddle horse of the machine gun service is carrying approximately 50 pounds more than the pack mule with the English model pack-outfit.

The pack loads are equalized and the loads ride lower than those of the saddle horse who is carrying a top heavy load to

which considerable strain is always added when towing mules at a fast gait, which disturbs its equilibrium. With properly selected horses to stand the slight increase in loads when carrying war packs, a uniform gait could be maintained at the maximum speed of the slowest horse for far greater distances than is possible with mules.

The mule has been tried in the Swiss, German and Austro-Hungarian Army as a machine gun pack animal, and the horse selected as more desirable.

In order to obtain accurate data upon the relative merits of the horse and mule for machine gun packs, it is suggested that two machine gun troops (provisional) of six sections each be assembled at some suitable post—Fort Riley or Fort Russell—where a comprehensive program could be worked out covering several months of field service and involving long and short marches, forced marches—by day and night—and including maneuvers in connection with marches and as parts of the minor problems to be solved, during which firing with ball cartridges at appropriate targets, such as would probably be taken advantage of in real service, and over known and unknown ranges, could be had. Such troops should be similarly equipped and perform the same service and solve the same problems, but that one be supplied with suitable pack horses and the other with pack mules. Such experiment might be still more comprehensive in its scope, than the mere determination of the relative merits of the horse and mule as machine gun pack animals and might include the proper test of the several pack outfits now in use; the contemplated organization of machine gun batteries or troops and the system of drill regulations that the War Department may have in view. Such tests, however, if anything is to be learned from them should be conducted by officers with machine gun experience who have shown their interest in and enthusiasm for this service, and not turned over to officers because of a consideration of rank, favor or convenience who have had no experience with or previous interest in machine guns. A board of three officers—a cavalryman, an artilleryman and a veterinarian—should accompany such commands for observation and report.

Several foreign officers with whom I have conversed upon

this subject of machine guns and who witnessed the work of our cavalry and infantry machine gun platoons at the Department and Division Meets in Manila have expressed their surprise that after nearly three years of trial and experiment with these guns no conclusion has been reached as to the best pack animal, pack outfit, system of drill regulations and organization, in the face of what has been accomplished along these lines in Europe and Asia.

That the machine gun will be an important element in the composition of all armies in future wars is generally conceded; then why not determine, without further delay, the best equipment, organization and means of transport, so that, while numerically few and dangerously inadequate in numbers of guns our machine gun organizations may reach the highest possible state of efficiency?

FIELD FIRING FOR COMPANY AND TROOP.

BY FIRST LIEUTENANT S. R. GLEAVES, FIRST CAVALRY.

No other phase of cavalry or infantry training receives so much attention from the American officer and enlisted man as rifle practice. Congress wisely encourages what seems to be a national characteristic and with its liberal appropriations has made possible a system of instruction which annually develops some of the most expert known distance riflemen in the world. An annual money allowance of over fourteen dollars per man, for small arms ammunition, is a sum few war budgets can afford; the smallness of our army permits us this advantage, and our people have consequently a right to hope that the battle firing of their infantry and cavalry may be a world standard.

Does our present system stand complete as the most efficient school we can devise in which to instruct and graduate a *battle* shot?

Granted that our graduate can hit a thirty-six-inch bulls-eye at eight hundred yards oftener than any American military rifleman ever could before; can he crawl over the top of a hill, estimate the range, and hit a khaki-clad moving figure as promptly as we could wish? If he cannot then our system is defective; we have the money; our men are intelligent and can shoot straight, and only need a chance.

Field firing, under battle conditions and at battle targets has long been recognized in Europe as the final stage necessary to develop the battle shot from the bull's-eye man. Proficiency in practice over varied terrain, at unknown ranges, at neutral colored targets which move and disappear—this should be the goal of military riflemen. We are absorbed in the intermediate steps—essentials though they are—and are losing sight of the ends of rifle efficiency for the soldier; we stop at the elementary and

never make our pupil apply his lessons to the practice of his profession.

Instruction in estimating distance is at present so perfunctory in the average organization that neither officers nor men are as well qualified as they need to be for their duties in campaign. Regulations are now too lenient as to the annual qualification in estimating distance. For his record test, each officer or enlisted man should be allowed but one set of estimates, this, where possible, over terrain never before used for the purpose. Conscientious, painstaking, and practical instruction in this subject is needed, not once a year with black silhouettes on the drill ground placed between certain known limits of distance, but practice throughout the year, at neutral colored figures, trees, and clumps of grass, over varied and difficult terrain. The non-commissioned officers should be trained at the same time to indicate objectives clearly and accurately. In each troop and company there should be two specially trained experts in estimating distance; an average of their estimates would assist the company commander in giving his ranges accurately from the start—and preponderance of accurate fire usually means victory.

Collective fire, as now prescribed for the company and troop, is of so little value that it should no longer have a place in our system. The target used is one we would probably never see under any conditions; ranges are known, and terrain is selected for its lack of difficulties and then smoothed of those that remain; there is little benefit to the company or the company commander, and the percentage of hits, as might be expected, is so high as to give men entirely false ideas; as offering a comparison between volley fire and individual fire it seems now to be hardly worth while.

The ammunition now expended in collective fire should go toward field firing, and by this test organizations should be graded; at the long ranges of modern battle groups of expert riflemen would be of little more battle value as firing units than so many recruits if their leaders were unable to estimate the ranges promptly and accurately. At many posts it will be impossible to conduct field firing on account of danger to surrounding population; at others, particularly in the Philippine Islands,

it is not only feasible but easy; at probably all the maneuver camps there will be little if any difficulty.

For any company commander whose surroundings permit the experiment, and who desires to conduct such practice, as authorized on pages 14 and 15, S. A. Regulations, 1906, no difficulties of any importance present themselves. A disappearing group of eight or more figures can easily be operated by one man in a simple individual pit, the target frame being rectangular, of light construction, and hinged so as to turn from a position face downward upon the earth to a vertical exposed position by means of a crank or rope in the hands of the operator. The moving target is equally as simple and consists only of figures mounted upon a broad base sled drawn by a team; the length of the rope attached is dictated by the cover available for the team and the length of the course over which the target is to move; a snatch-block may well be used to change the direction of pull. Bookbinder cardboard silhouettes are convenient for this work on account of their lightness; the Ordnance Department has sent out a number of these for trial as skirmish groups; or, target cloth may be stretched over the frame, painted the color of the natural background, and the silhouettes cut out of wrapping paper, painted any color desired, and then pasted on the target cloth.

Signals to operators in the pits for exposure of targets, and to the driver of the team for the moving target are best given by an agreed number of pistol shots from the officer in charge, who thus retains entire control of the firing line and targets. The marking detail, consisting of non-commissioned officers and men from another organization, should follow the firing line until the problem is concluded; marking results of fire immediately after its delivery causes a long drag in the exercise and detracts from its realism and interest. When firing on disappearing targets any limit placed on the number of rounds fired in individual firing from any position is open to the same objection; however, for purposes of grading or competition between organizations both measures might be necessary in a particular exercise.

Properly directed problems in field firing cannot fail to be instructive as well as interesting, however simple in character they may be; a line of realistically placed silhouettes encountered

is formed by hill A-E (see sketch) running north and south; a higher wooded ridge running east and west from A forms the leg, and the third side is similarly closed by a line of heights B-C-D. A small stream flows southeast through a defile at the vertex of the triangle, passes a hundred yards east of the Garden, and leaves the plain by a second defile at the south end of hill A-E; the heights B-C-D and hill A-E are free from woods but covered with high cogon, the plain itself is covered sparsely with knee deep grass. Trails leave the enclosed area through defiles at each angle and a lookout was posted on each; no other precautions were necessary.

The troop, in full field equipment, was dismounted to fight on foot under cover of spur at A and, deploying as skirmishers, took cover along crest A-E, two platoons of two squads each, each platoon placing twenty-four rifles on the firing line. Each man carried sixty rounds of ball cartridges; the platoons were commanded by the first sergeant and the quartermaster sergeant. Two assistant officers reported that they had ridden over the ground, posted the lookouts, inspected the targets, and that everything was in readiness for firing to begin. Each officer was then instructed to accompany a platoon but not to exercise command; to make notes of ranges estimated and rounds fired, defects in fire discipline, etc., and in particular to see that every precaution was taken in his platoon against accident.

Two selected shots—expert riflemen—were here detached to fire as sharpshooters from a covered position on spur E, as follows.

Sharpshooter No. 1 to fire at two mounted figure silhouettes, one black and one khaki, ten yards apart, visible on the crest of hill B, overlooking the Garden.

Sharpshooter No. 2 to fire at two standing figure silhouettes, one black and one khaki, ten yards apart, visible on edge of bluff at C.

Each sharpshooter was to fire ten shots at the black figure of his group and ten at the khaki, his entire twenty shots, including estimation of range, to be fired in five minutes. An officer supervised this practice.

The troop, from crest A-E, saw two targets exposed for its fire:

(1) Target B, stationary, 16 prone figures, khaki, in line along northeast slope of hill B.

(2) Target C, disappearing, 16 prone figures, black, in line just inside Garden, at foot of hill C.

Each platoon and squad leader was, as a test, required to call out his estimate of the range to target C; an average of these estimates was taken by the troop commander as the range for the initial volley, and three volleys by troop were fired at target C. The objective was then changed to target B, ranges estimated and averaged as before, and three troop volleys fired.

Target C disappears and the line is advanced toward the Hospital Garden; after having advanced some distance target C again appears (at signal from troop commander) and the line is halted for firing. The chief of the second platoon is ordered to open "fire at will" upon target C in his front, and keep up his fire as long as target is visible; he has already been directed to require his chiefs of squad to call out range estimates at every halt, but he may entirely disregard these estimates if he so desires. Similarly the chief of the first platoon is directed to open "fire at will" upon target B in his front.

Target C soon disappears, firing ceases, and orders are given to resume the advance. Suddenly a group of 6 kneeling figures—target D, disappearing—appears in the high grass on hillside D in position to enfilade the line at close range; the chief of the second platoon is ordered to refuse his platoon to the left and open "fire at will"; the chief of the first platoon requires his platoon to lie down under best cover attainable.

Target D disappears shortly afterward and the advance is resumed; target C soon reappears and "fire at will" is again opened by each platoon upon the target in its front; target C disappears, target D reappears on the flank and the second platoon has again to be maneuvered to fire to the left. Target D appears no more during the advance.

The troop is again advanced—always by rushes; target C reappears and "rapid fire" is ordered on both targets.

Target C disappears, and appears no more during the ad-

vance. After moving a few yards the line is halted by the troop commander who calls the attention of the platoon commanders to a new target—target E, stationary, 10 kneeling figures, black, in line—just now visible for the first time on the high hillside north of Troop “K” Garden road, about 300 yards northwest of the ford. Platoon commanders are directed to alternate in firing three volleys.

Advance is again made rapidly toward the Garden; when the line is about 75 yards east of the stream six moving figures—black silhouettes, kneeling—leave cover near the southern exit from the Garden; they move slowly at first, then rapidly across the open ground toward hill D. “Halt” and “commence firing” is at once signalled on the trumpet; “cease firing” is sounded after the figures have moved about 100 yards.

This terminates the firing, the led horses are brought up and the troop marches to the various targets to inspect results.

RESULTS.

First firing position:

(a) Sharpshooter No. 1, objective two mounted figures; estimated range 800 yards, then corrected by firing to 700, true range about 675. Shots fired, 20; hits, 4 on khaki, 1 on black. Percentage, 25.0.

Sharpshooter No. 2, objective two standing figures; estimated range 600 yards, then corrected by firing to 550, true range about 580. Shots fired, 20; hits, 2 on khaki, 3 on black. Percentage, 25.0.

(b) Troop volleys on target C:

Estimates of range—Chiefs of Squads, 1st platoon, 975.-750. Chief of Plat., 800. Chiefs of Squads, 2nd platoon, 800.-700. Chief of Plat., 800. True range about 715 yards. Hits not marked.

Troop volleys on target B:

Estimates of range—Average of estimates by all group leaders, 862 yards. True range about 775 yards. Hits not marked.

Second firing position:

(a) 1st Plat. Target B: Estimates of Chiefs of Squads,

500, 600. Chief of Platoon orders "Battle Sight." True range about 600 yards.

2nd Plat. Target C: Estimates of Chiefs of Squads and Platoon, 500, 450, 450. True range about 540 yards.

(b) 2nd Plat. refused position, target D: Estimates of Chiefs of Squads and Platoon, 400, 275, 350. True range about 390 yards.

Third firing position:

(a) 1st Plat. Target B: Estimates of Chiefs of Squads, 400, 400. Chief of Platoon orders "Battle Sight." True range about 475 yards.

2nd Plat. Target C: Estimates of Chiefs of Squads and Platoon, 375, 425, 450. True range about 415 yards.

(b) 2nd Plat. refused position, target D: Estimates of Chiefs of Squads and Platoon, 200, 225, 225. True range about 300 yards. Shots fired by 2nd Platoon on target D at 2nd and 3rd firing positions, 382. Total hits, 113. Percentage, 29.6.

Fourth firing position:

"Rapid Fire" on targets B and C; no range estimates.

Total number of shots fired on target B at 1st, 2nd, 3rd and 4th firing positions, 676. Number of hits, 82. Percentage, 12.1.

Total number of shots fired on target C at same positions, 644. Number of hits, 84. Percentage, 13.0.

Fifth firing position:

3 volleys each platoon on target E: Estimates of range: Chiefs of Squads and Platoon, 1st Platoon, 675, 700, 700. Chiefs of Squads and Platoon, 2nd Platoon, 900, 800, 800. True range about 680 yards.

Total number of shots fired, 144; number of hits, 27; percentage, 18.7.

Sixth firing position:

Individual fire at moving figures: Range about 175 yards. Number of shots fired, 346; number of hits, 86; percentage, 24.8.

NOTES AND CRITICISMS.

The firing line—48 men—consisted of 2 expert riflemen, 11 sharpshooters, 13 marksmen, 17 first classmen, 5 second class-

men. The troop had just completed target practice, collective figure of merit being 61.4.

In the first platoon the leader chose to use the "battle sight" for all ranges under 600 yards; in the second platoon the sights were required to be accurately set for each range, the number of hits made by each platoon on its own target was practically the same.

The rapid change of front of a designated group in the firing line to fire against a new objective on its flank is attended with more or less confusion and difficulty even under such simple conditions as given in the problem; such maneuvering of dismounted groups is good instruction at drill for both group leader and men, involving use of cover, estimation of range, and quick decisions on the part of all concerned. If target D group had been actually firing the percentage of loss in the second platoon in changing front would have been very high; the men bunch and are slow in reaching proper positions in proportion as excitement increases; of course a troop reserve on hill A-E would have met the situation properly.

Estimates of range varied greatly among the group leaders and was sometimes wild; thanks to the present very flat trajectory and the short ranges available, these errors in estimation of range were not very costly in the problem; in actual service, dismounted cavalry will often have to deliver long-range fire, as in rear guard delaying actions; in such cases good estimation of range will be essential in order to gain any fire effect of any value.

Both sharpshooters and almost all the members of the firing line disregarded the rests in aiming offered for the rifle by trees, bushes and rocks—a defect in our system of training.

There was noticeable the disregard for cover which seems to be inseparable from all our maneuvers; the only instructor who can hope for perfect results here is the enemy with ball cartridges.

The problem was so arranged as to make necessary frequent and wide changes in sight-setting; the directions of the group leaders in these cases were carried out by the men more carefully than had been expected; when occasion arose for "rapid

fire" many men in the second platoon failed to lower their sights as instructed; this error was not possible in the first platoon since the "battle sight" only had been in use since leaving the first firing position.

The rate of fire used by the men during "fire at will" was higher than that seen at drill, due in some cases to excitement but in most cases to a natural desire to make the most of the chances offered by a disappearing target.

THE USE OF THE BUZZER BY TROOPS OF THE LINE.

BY FIRST LIEUTENANT H. C. TATUM, SEVENTH CAVALRY.

The use of the buzzer by troops of the line seems practicable and necessary for the following purposes:

First. As a means of information transmission in general reconnaissance, outpost and detached duties, which lie beyond the scope of its application by organized signal troops.

Second. As a means for preserving the strength of men and animals to meet the final situation of battle.

The practical utility of the buzzer has been well demonstrated at our maneuvers in the last two years. Our organized signal troops have not only been able to connect the commander-in-chief with his larger units by this means, but have succeeded in keeping the various independent detachments in communication with the main command during reconnaissance work, and to tie up their outpost lines at night, often as far to the front as the cossack post. These results have been obtained, however, under maneuver conditions, and where the opposing forces have scarcely exceeded a brigade on either side; with no communication to maintain between division and corps, or army headquarters. Under actual war conditions the first duty of the signal corps is with the higher units, and it is scarcely possible that it will ordinarily be able to function beyond the brigade or regimental headquarters. The proposed organization of signal troops provides one field company of about six sections, twenty men to the section, to supply the tactical lines for an entire division. On the march this company must maintain communication between the various columns, advance and flank guards, and with the command from which the division may be sent. In battle formation, it must tie the division to corps or army headquarters, the several brigades to the divisions and possibly the regiments to brigade headquarters. It may further be called upon to tie up a general

outpost line, and to keep in touch the several lines of attack. With this amount of work for the field company it may be seen that the brigade will never have with it more than one section to supply its tactical lines. This section is capable of maintaining a maximum of eight signal stations, including one flag or heliograph station. Therefore, while our maneuvers have demonstrated the utility of the buzzer far to the front, it is evident, that if we are to use it in all cases where its application is practicable and necessary, a part of the work must fall to the troops of the line.

Let us consider somewhat in detail, and in connection with the work of the field signal company, situations of active operations which call for the use of the buzzer by infantry and cavalry.

The division on the march, with trains, covers about eleven miles road space. The commander of this unit should be able to communicate with the tail of the column, advance and flank guards. He may further have to talk with army and corps headquarters, or coöperating divisions. The division may be marching on several parallel roads, in which case, intercommunication cannot be dispensed with. All lines are constantly changing. It is clear, therefore, that the field company's most difficult problem is the marching division. Assuming, however, that it will be able to provide information lines as far to the front as the support of the advance guard, there is still left much valuable work for the buzzer and buzzer line. It is at the support that the detailed reconnaissance begins, that rapid transmission of information is most essential and the work of man and horse is the most trying.

At each halt men must be sent from the support or advance party to hill tops, roads and trails for observation. The longer the halt the more important such duties become. Speedy reports are necessary. Without the buzzer two men are required for each hill or road—one to remain in observation and one to return with the report, which may often arrive too late. It is true that signals may often be given during the day by flags or improvised means, but such signals cannot be relied upon. They are apt to expose the observer's position, and it is quite usual that the best points for observation are not in sight of the detachment to which messages are to be sent. One man with the buzzer can do the

work of two. The light buzzer wire can be unreeled as fast as the man can go, mounted or dismounted, and while in position for observation, alarm may be given instantaneously, over the phone, or the movements of an enemy in sight reported progressively. The advantage of talking matters over by phone is evident. Important details may be cleared up and information transmitted which could never be contained in a written message, or reported verbally by an orderly. The Japanese applied the phone to advantage for such individual use, especially around Port Arthur.

The same advantages for buzzer use obtain at the picket, cossack, or detached posts, and to the more important sentinels of the outpost. These units tied to the supports by a buzzer line would secure timely information of the enemy and eliminate a greater part of outpost patrolling, so trying on men and horses. The detached post guarding fords, bridges, hills and villages may be a mile from support for infantry or two miles for cavalry. Here, safety often depends on secrecy and quick communication. The clatter of horses' feet on the road often discloses the position and brings the post or patrol to grief. For such cases the buzzer provides the most expedient means for transmitting information and eliminates the patrol. The accidental discharge of a rifle or other false alarm on the outposts means patrols and unrest at the picket or support. Communication between neighboring supports and pickets is necessary. Intervals and distances between these bodies are not very great on an air line, but with intervening obstacles such as thickets, bogs, gullies, small streams, etc., the patrol must often traverse a mile or more. The buzzer obviates such difficulties. All these details of minor tactics may be of little concern to the commander of the whole, but they do mean a great deal to men and horses, and the subordinates charged with the duties of security and information. If the divisional signal company extends its lines to the reserve of the outpost, the buzzer has a sufficient application further to the front to justify its use by troops of the line. If the company's lines reach the supports, there is still important work for the buzzer to accomplish.

On the offensive, as exemplified by the operations in Manchuria, the modern battle is fought by slow successive stages.

Advance posts, key points and points of control, upon which to pivot an advance of the line or an extension of a flank, must be taken, step by step, by infantry regiments and battalions. Advances of the line depend upon the progressive reports from these positions. Telephonic communication is absolutely essential. Men of the signal unit fall with the others in battle. Lines are lost and destroyed with the loss and recovery of the positions. It appears that for this, the supreme situation, every possible provision should be made for the maintenance of communication.

On the defensive, before contact, every possible avenue from which the enemy might approach must be observed. This involves an extended front of widely scattered detachments far in advance of supporting bodies. These bodies should be able to provide their own lines at night as a matter of security and to afford some relief to horses and men. After contact, when the troops are in position, communication is of paramount importance. Coöperation and mutual support of all the elements of the defense involves wire lines from flank to flank and from the advance post to the commander-in-chief. If possible, every trench or redout should be tied to its neighbor and every advance post to its supporting body. It is true, that on the defensive the signal company will have the advantage of knowing beforehand where most of its lines are to be located. On the other hand, the number of its lines must necessarily be increased many fold. If one provision for communication fails another should be on hand to function. So important was the telephone to the Russian defense in Manchuria that many of the officers bought such instruments out of their own pockets for use with their regiments.

The extent to which the signal company will be employed with cavalry greatly depends on the question of mobility and the mission of the commander. Scarcely more than a single wireless section, for communication with army headquarters, will ever accompany cavalry acting independently. The buzzer, with such a command, however, has a special important application. The independent cavalry brigade acting as a screen may cover ten miles of front. The main column must have its own immediate outposts at night. The contact detachments several miles in advance must provide for their own security. If the column marches on parallel roads wire communication at night is the

most expedient, and saves horses and men. Similar uses of the buzzer apply to the work of divisional cavalry. The cavalry raid calls for the extreme physical endurance of man and horse. For its outpost during a halt or during the execution of its special mission the buzzer line it seems would be invaluable in giving timely information and the much needed relief to men and horses.

It is not proposed that troops of the line should provide their own buzzer communication in any case where its employment is practicable by the organized field signal companies. To the contrary, the bad effect of the tangled and crossed lines that would result from an independent use of wire by both services, especially on outpost and on the battlefield, are fully recognized. The advantage of the specially trained unit for this work as far to the front as possible is obvious. On the other hand, the work of the signal company begins at division headquarters. Its first duties lie with the higher units. Questions of its own control, supply and coöperation must necessarily limit the distance to the front at which it may be depended upon, under all circumstances, to function as an organized unit. Therefore, in order to guarantee the services of a valuable messenger, needed in the every day work and in all the phases of active operations, the adoption of the buzzer by infantry and cavalry deserves our serious consideration.

If the buzzer has an application for infantry and cavalry it is worth using to the best possible advantage, and questions of equipment, transportation and personnel at once arise.

In the first place, the signal corps has developed instruments and equipment well adapted for all conditions of field service. Two types of the buzzer are at present employed—the field buzzer and the cavalry buzzer. Both of these buzzers may be used as either a telegraph or telephone instrument with equal efficiency. It is not proposed that the buzzer should be used by line troops otherwise than as a telephone. It is believed, however, that its adoption would naturally develop a number of good telegraph operators in our service, which would be advantageous in time of war. Of the two types, the field buzzer is the more substantial and gives more battery. It is also the more bulky and heavy; size, about 8x5x4 inches; weight, about 9 lbs. The cavalry buzzer

weighs about $5\frac{1}{2}$ lbs; size, about $7 \times 5 \times 2$ inches. This instrument is delicate and complicated in construction. Considerable technical training would be required for its general use. It possesses the advantage that it can be cut in on any existing telegraph line. This is especially important in connection with its use by cavalry. A third type of the buzzer, recently designed by Lieut. J. G. Winter of the cavalry, and at present under construction, promises to combine the advantages of the types named and to eliminate the disadvantage of the latter. It is about the size of the cavalry buzzer and weighs about 6 lbs. Its most distinguishing features are strength and simplicity of construction. All contacts are made by metal strips, no wiring involved. These qualifications at once make it the type best adapted for use by line troops.

There are two standard sizes of wire—field wire and buzzer wire. The field wire weighs 70 lbs. per mile and for use is generally carried on reels, by carts or pack mules. The buzzer wire comes in one-half-mile spools, total weight $5\frac{1}{2}$ lbs. The spools are about four inches long by six inches greatest diameter. Both wires are necessary for efficient service. The former will stand rough usage. It will hold up under the heaviest wheel transportation and is therefore suited best for use as far to the front as the supports of the outpost. The lightness and portability of the latter make it specially adapted for the picket, cossack or detached post, and for individual use. By use of an accompanying ground rod as a spindle, it may be unreeled from a horse at a gallop.

A regiment of infantry as an outpost for a division normal formation, occupies a front of about $2\frac{1}{2}$ miles at the line of sentinels and a depth of about 1 mile from sentinels to reserve. The reserve would generally be from 1 to $1\frac{1}{2}$ miles from the main body. On this basis 3 miles of field wire would tie up supports, reserve and main body, or pickets, supports and reserve. These distances would never be exceeded in battle formation. Five miles of buzzer wire would tie up all pickets and sentinels or cossack posts. Allowing 4 miles for detached posts, breakage and loss, the total buzzer wire per regiment would be 9 miles. To tie up all pickets, supports and reserve, which would seldom

be necessary, would require about 11 buzzers, allowing 4 additional for double connections, detached posts and individual use, gives a total of 15 buzzers per regiment.

A squadron of cavalry as an outpost for a cavalry brigade, normal formation, occupies an extreme front of 4,000 yards and a depth of about 3,800 yards. On this basis $3\frac{1}{2}$ miles of field wire should tie supports and reserve, or reserve with main body; or it would provide a wire line between columns on parallel roads. Allowing, however, for considerable variation in intervals and distances which are usual with cavalry, 5 miles of field wire would seem a reasonable estimate for one squadron. The weight of field wire, however, precludes the possibility of an allowance of 5 miles per squadron. Field wire can only be used with the squadron when it is acting with its regiment—for example, as the outpost squadron—5 miles would then be the allowance for the cavalry regiment. This wire should be kept with regimental headquarters and shifted to the outpost squadron, or used for other regimental communication, as the occasion demands. The squadron acting independently will have to depend on the buzzer wire. From the above figures, 6 miles would tie up the entire outpost. Four miles for losses and other purposes, gives 10 miles of buzzer wire per squadron. Owing to the numerous detached duties of cavalry 2 buzzers per troop, 24 per regiment, is not thought excessive.

These estimates are based upon outpost dispositions as they represent the maximum distances for the use of wire lines by the infantry or cavalry regiment.

We have then for each infantry regiment:

3 miles of field wire, weight.....	210 lbs.
9 miles of buzzer wire, weight....	100 lbs.
15 buzzers, weight.....	90 lbs.
Total.	400 lbs.

For each cavalry regiment:

5 miles of field wire, weight.....	350 lbs.
30 miles of buzzer wire, weight....	330 lbs.
24 buzzers, weight	144 lbs.
Total.	824 lbs.

To the above should be added for infantry, about 20 lbs., and for the cavalry about 30 lbs. for buzzer wire reels. The equipment should also include a reserve of cells. Each buzzer requires three cells, which, with proper care, should last at least one month. Each cell weighs about $\frac{1}{2}$ lb. Sixty cells, 30 lbs., for the infantry regiment, and ninety cells, 45 lbs., for the cavalry, would provide a battery supply for two months, allowing for bad cells.

Total weight, infantry, 450 lbs.

Total weight, cavalry, 899 lbs.

Considering the above weights, the character of the work with line troops, the question of mobility and distribution, pack transportation at once seems the best adapted for this service. It is believed that proper pack equipment could easily be devised to meet all requirements for the work.

As a tentative organization, a separate detachment of one non-commissioned officer and six privates is proposed. This unit is thought quite sufficient to meet all demands for regimental buzzer service. Its attachment to the Machine Gun Platoon for administration purposes, appears especially expedient. Such a detachment would possess the advantages of flexibility and centralized responsibility. It could be employed as a whole, with the regiment or a squadron or battalion thereof. With a suitable disposition of equipment, two men could be detached for each battalion or squadron, or even to the company or troop, or smaller unit, requiring buzzer lines. These two men could easily accompany the head of the column and provide the necessary buzzer equipment for individual use when needed. This detachment could lay and recover all wire, and distribute buzzers at points necessary during the occupation of an outpost, or for other purposes, leaving nothing for the other troops, but to use the telephone.

On the above basis, the accompanying tentative scheme of organization, equipment and transportation, for the employment of the buzzer by infantry and cavalry regiments, is proposed.

While practical experiment would undoubtedly suggest a number of valuable changes in this scheme, it is believed that the

employment of the buzzer along these lines would materially increase the efficiency of our information service.

Tentative Scheme of Organization, Transportation and Equipment, for the use of Buzzer by Infantry and Cavalry Regiments:

INFANTRY BATTALION—Personnel: 2 Privates. Equipment: 1 mile F. wire, wt. 70 lbs.; 2 miles B. wire, wt. 22 lbs.; 3 Buzzers, wt. 18 lbs.; Buzzer reels, wt. 7 lbs.; 60 Cells, wt. 30 lbs.; total wt., 147 lbs. Transportation: 1 Pack Mule, 147 lbs.

ADDITIONAL—2 Buzzers, 1 mile B. wire, carried by detachment, 2 men to each battalion.

TOTALS FOR INFANTRY REGIMENT—1 N. C. O., 6 Privates, 3 miles F. wire, 9 miles B. wire, 16 Buzzers (1 extra for N. C. O.), 3 Pack Mules.

CAVALRY SQUADRON—Personnel: 2 Privates. Equipment: 9 miles B wire, wt. 99 lbs.; 6 Buzzers, wt. 36 lbs.; Buzzer reels, wt. 10 lbs.; 30 Cells, wt. 15 lbs.; total wt., 160 lbs. Transportation: 1 Pack Mule, 160 lbs.

ADDITIONAL FOR SQUADRON—2 Buzzers, 1 mile B. wire, carried by detachment, 2 men to each squadron.

ADDITIONAL FOR REGIMENT—5 miles F. wire, 350 lbs.; 2 Pack Mules, 175 lbs. each.

TOTALS FOR CAVALRY REGIMENT—1 N. C. O., 6 Privates, 30 miles B. wire, 5 miles F. wire, 25 Buzzers (1 extra for N. C. O.), 5 Pack Mules.

THE NATIVE SCOUT ORGANIZATION.

BY MAJOR J. N. MUNRO, PHILIPPINE SCOUTS.

There has been much recent agitation among scout officers and others regarding needful legislation for the scout organization. Many scout officers today overlook one vital question upon which depends all legislation touching the native soldier and his organization. That question is: "What is the United States going to do with the Philippines?"

It would be manifestly foolish for our government to provide an elaborate, or more or less permanent, native organization until a policy had been defined for the islands. That no such definite policy has been deemed wise by our legislators must be evident to those who have noted the tentative character of all acts affecting the Philippines; the conflict between the leading representatives of our press and the discussions in the halls of Congress on this subject.

What will be the answer to the above question is not my business and does not concern me. That it is coming soon I think we all believe. But, until it does come, no legislation of any importance affecting our native military organization need reasonably be expected. The present scout organization is sufficient to meet all present demands and is in line with our tentative insular policy. In fact I should say it has even a more satisfactory and definite character than could reasonably be expected. It is on a basis from which it can be readily expanded to a very satisfactory little army, smoothly and without any elaborate legislation. Its disbandment would be equally facile. This in itself is a point of no small importance to the scout and his officer. On the whole, I should say that the policy of our government with respect to the scout organization has been exceedingly far-sighted and wise. To be sure there are certain things that, to secure individual justice, would seem to need attention.

I have no desire to discourage any attempts to secure a better or more permanent organization for our native soldier, or a more satisfactory status for him. Until the settled policy of our government warrants a more permanent native force, the following points have suggested themselves to me as worthy of attention.

ORGANIZATION.

As previously stated, the present organization of scout battalions, with a percentage of unattached companies, is perfectly satisfactory for present conditions. It establishes a basis for readily expanding our native contingent when conditions warrant. It gives the necessary training to scout officers in administrative duties which will prepare them for similar work in any larger administrative unit and it is well adapted to the work in which not only scout, but regular, organizations in the islands have been engaged for the past five years or more.

Any larger unit than a battalion would serve no particular purpose at present. Even with the battalion organization it is extremely rare that a battalion can be held intact. Two companies at most are all that the battalion commander can hope to have under his direct command. Under conditions such as these, a larger unit, as a regiment, would simply be a farce and accomplish nothing that could not be as readily performed by a battalion. Conditions are changing, we all hope, and the time may not be remote when a regimental organization will be found advisable. If so, our present organization is the very best preparation for it.

There are directions, however, in which I believe we might profitably expand. One of these has been forcibly impressed on me by the service in Samar, although the idea was conceived long ago. This is the organization of at least one battalion of native pioneers. Such an organization could, I believe, be made efficient with less trouble, or training, than any other branch of the service and would be most useful.

The skill with which the average native uses the simple material at hand for every form of construction is a matter of common knowledge. His knowledge of cordage seems to be born in him. Practically every form of serviceable knot, lashing, or tie, may be found in the structure of the simplest native shack, not

of cordage, to be sure, but what is far more important, of bejuco, or any one of a number of varieties of vine that are to be found on every mountain trail. Examine a bridge built by a native road gang over a stream on a mountain trail. Do you find nails, spikes, planking, or expensive dimension stuff? Not a nail, not a plank, not a square timber. Every piece of material in the entire structure was found probably within two hundred yards of the bridge, and perhaps the only tool that assisted in the construction was the ever-present bolo. Every joint in the structure lashed with bejuco, or in the absence of that most desirable material, with strands of tough vine, bark or withes. Every joint perfect, structure properly braced, and solid. Yet not a man in the gang ever heard of Beach's Engineering. They never had any instruction in cordage or lashings so far as they know. A pioneer organization of such men with their knowledge systematized and aided by training would, under intelligent supervision, be invaluable in front of an advancing column in a tropical country such as this.

To return to the bolo, I will venture to say that three natives with good bolos can take the lead of a small column and slash a trail through the average tropical mountain forest as fast as the column could march in file over that character of country were the trail already there. It is unnecessary to enter into any discussion of the value of such work.

In water the average native is at home, the dirtier the water the better. With small boats he is an adept. He *has* to be to live in his own country. Temporary rafts, hasty devices for crossing streams are daily incidents in his life. And in mud he is in clover. He has contended with it all his life.

It is unnecessary to cite any more of the natural qualifications which the native possesses for this work. In the first place I suggested one battalion of pioneers. This, of course, merely as an experiment and to test the value of such an organization. For actual field work the number of such pioneer battalions would depend on the work in hand.

In recruiting for a pioneer organization nothing but the working class of native should be enlisted, except a few bright men of more than average education to serve as non-commissioned officers and to assist in training the privates.

Such an organization would present a good opportunity for some ambitious young engineer officer, and the non-commissioned personnel of our engineering corps.

Another idea which long ago occurred to me is that of mounted scouts. It may be well to state in the beginning that the first native organization which was given a status was intended to be a squadron of cavalry and was so designated. The entire equipment, fitted for native ponies, was made in the United States and shipped to the Philippines. The money for the purchase of five hundred ponies was appropriated. I had been informed by the squadron commander that I would be detailed to purchase the ponies. But, through some hitch, the ponies were never purchased and the only mounts that came into the possession of the squadron were some captured ponies which it was permitted to keep. One troop had forty such ponies and forty men of this organization were trained as cavalry and made excellent progress. Many of their mounts when captured were mere bags of bones, but after a few months of care, although almost constantly in use, became excellent, well conditioned animals. This troop was commanded by an officer who had had considerable experience as a non-commissioned officer in the cavalry service and was one of the best drill instructors I have ever seen.

The average native knows very little or nothing about horses and their handling and there are many who will say that any idea of a mounted native organization is ridiculous and would merely be waste of time and money. I remember very distinctly any number of officers who said the idea of native scouts was ridiculous and could only result in a miserable failure and probably disaster for their officers. I believe that a creditable mounted native organization is perfectly feasible.

Results cannot be expected at once. The training of such an organization is going to require time; it is going to require patience; it is going to require much hard work. The trouble with us is that we expect immediate results. We are an energetic, rapidly moving people. I would not expect marvelous results at first. A thoroughly trained organization could not be made in six months, or a year, or even in an enlistment possibly. But it can be made.

If there is one thing above another that the native Filipino needs to learn it is a knowledge of horses. I know of no better way to begin to disseminate a little of such knowledge than by thoroughly training a mounted organization. This in itself would seem to be sufficient reason for organizing at least one squadron. It is fully authorized by the act of February 2d, 1901, and requires no legislation.

The troop officers should be carefully selected from non-commissioned officers of the regular cavalry service, young enough to be enthusiastic and of sufficient service to be thoroughly experienced. There are a number of such who are scout officers now. There should be three officers to the troop at all times for at least one year after organization.

The troops should be smaller than the present companies, probably not more than seventy-five men, carefully selected. There should be an experienced horseshoer and farrier detailed to each organization to thoroughly instruct selected men for these positions. Eventually such details would be no longer necessary. Mounts might be either native, or Australian ponies. Otherwise, the organization to be the same as for regular cavalry. Changes in equipment adapted to the native soldier should, of course, be made and would suggest themselves as the organization progressed.

I would like to see this organization tried out, although I know it would require a greatly increased amount of discouraging and apparently thankless work.

There are several changes badly needed in the present organization. One of the first and most pressing needs is the addition of three battalion non-commissioned staff officers; a quartermaster sergeant, a commissary sergeant, and a color sergeant. Battalion quartermasters frequently are so situated that they have the work of an entire post to perform without the assistance of a post quartermaster sergeant, or post commissary sergeant. This is too much work to expect of one man when the voluminous clerical work of these offices is considered. It has been found absolutely practicable to train native battalion sergeants major in their duties so that they require the merest supervision. There is no reason why similar men should not be trained in the clerical

work of the other staff departments. It will be simply a preparation for the proper equipment of the staff departments of larger administrative units in case these are ever warranted.

The battalion quartermaster sergeant could perform the duties of post quartermaster sergeant, while the commissary sergeant could perform those of the post commissary sergeant. The color sergeant could perform the duties of provost sergeant and at formations carry the recently authorized battalion colors.

Since the provisional bands have been authorized there should also be some provision made for a band leader. A suitable leader cannot be secured for the ordinary enlisted pay of the rank and file and he must be maintained at the expense of the officers and organizations of the battalion.

Aside from the above I would suggest no immediate change in the present scout organization.

A limited number of companies and few more battalions might now very well be added to the present force, but that requires no legislation, or change of organization.

RECRUITING AND ENLISTMENT.

Absolutely no recruiting for scout organizations except by experienced scout officers and surgeons should be permitted. Anybody cannot enlist native soldiers, no matter what his experience as a recruiting officer may have been, and get results. To enlist natives intelligently requires experience as a scout company officer, a considerable study of the native character as shown by his features, actions, and a thousand other things that are learned only by experience.

What is true of the recruiting officer is true also of the examining surgeon. There are a dozen physical reasons that should bar a native candidate for enlistment that only an intimate knowledge acquired by practical experience will reveal. For example: a native once a victim of beri-beri should never be enlisted or reenlisted. He may appear perfectly sound and healthy, but he will not stand the test of service. There are diseases to which the native is subject which will never be discovered in the ordinary examination of a recruit and must be sought for. One of these, a most rare disease, has recently been

discovered accidentally in my own command. This is commonly known as fluke worm in the lungs. It is incurable at present and its means of transmission and source are unknown. Surgeons detailed to examine native recruits should have had sufficient experience to know what they are about.

Recruiting should be by company officers even in the case of a battalion, unless the battalion commander knows that he has an officer especially fitted for this work. The present scheme for recruiting, recently adopted by General Wood, is on this line and is excellent.

The return of a scout organization from hard field service to their tribal home at about the date of their discharge, and recruiting gradually right on the organization's native heath cannot help being productive of the best results. It gives the soldier an opportunity to visit friends and tell them about his services. They are great home people. The average native travels but little. A journey from his province to a strange one is a more important event to him by far than a journey from the United States to the Philippines is to the average American. These things must be considered if we are to get the best results from our native soldier. He should feel reasonably certain of a return to his native land after a tour of duty well performed in a distant province. The time may come when he will be sufficiently Americanized so that home will mean nothing to him. But not yet.

Tribal lines should be maintained in all organizations up to and including battalions, but not too strictly. Many desirable men are found who get on well in tribes other than their own, although as a rule this is not the case. Such men should be permitted to remain with their adopted tribe and will be found specially valuable to their organization when serving in their own tribal jurisdiction. Such men, if it is found advisable, could very easily be transferred to an organization of their own tribe at the end of a campaign, or when the organization to which they belong is sent to the home station.

The term of enlistment should be longer. A majority of scout officers whom I have consulted favor five years. An enlistment should begin with at least a six months' probationary

period. This would determine the man's fitness for the service and would probably develop any insidious disease which might have escaped the recruiting officer. His discharge during this period should be easy and not require the official routine now necessary. The only proper judge of any man's fitness for the service is his immediate commanding officer, who sees him and labors with him daily.

The age limit for scout recruits should not be over twenty-five years and the inferior limit might easily be as low as sixteen. The native develops rapidly, reaches his best early, and declines very rapidly. A man enlisted at thirty seldom improves much, and learns slowly, while at twenty the native improves rapidly under intelligent instruction and with military training develops a much better physique than he otherwise would.

There could be the same inducements to reinlist for the native soldier that there are for our American soldier. This matter, with others of a similar nature, will adjust itself I have no doubt, if the native soldier is ever given a permanent status. He should be given the reward of both continuous service and re-enlisted pay. The latter has been adjusted by recent orders. Some scheme for retirement and pension should be adopted. Inasmuch as the native does not as a rule retain his vigor to the same age as the American soldier, the service for retirement should be shorter. Five five-year enlistments will be all the service we can expect from the average native. In fact, scarcely so much can be expected. Retire him after twenty-five years' service on half pay and allowances and he will be perfectly satisfied. Men disabled in the service should be taken care of in some way. A soldiers' home could be established at very little expense, on the same principle as our soldiers' homes in the United States. Useful employment for such of the inmates as are physically able to work could be provided and by sale of their work practically defray expenses. A scheme of the kind has been outlined by Major H. S. Howland, Philippine Scouts. This, however, cannot well be arranged until a reorganization of a permanent character is effected.

I am not in favor of the latest increase of pay. The principle of this increase I do not think was the best. I believe, how-

ever, that a considerable increase of pay for the non-commissioned officers would be wise, especially for the higher grades.

A scheme whereby this could have been done without material increase in cost to the government has been suggested to me by Captain Halstead Dorey, 4th Infantry, who, under General Wood, had charge of scout matters and has studied the scout situation carefully. I believe it a good one. Roughly, it is this. Grade the privates into first and second classes. Let the recruit enter as a second class private at ten pesos per month. Upon promotion to first class private increase his pay to fifteen pesos per month. Apply the money thus saved on second class privates to increase the pay of the non-commissioned officers, especially in the higher grades. In addition to the above I believe the following conditions should obtain. First class privates not to exceed at any time fifty per cent of the strength of a company. All non-commissioned officers to be selected from first class privates. No private on his first enlistment to be promoted to first class private during his first six months unless he develops unusual qualifications during that period.

I am strongly in favor of keeping the pay of the native private at its lowest limit. Conditions which surround the class from which the scout private invariably comes, are in no sense the same as those surrounding our regular recruit before his enlistment. A regular income of ten pesos per month with his ration and allowance for clothing is opulence to the Filipino; something absolutely out of his reach before enlistment. His case is not parallel with that of the regular recruit. Just as surely as we give him more money than he really needs we are going to spoil him, just as we have spoiled the native in general by our careless extravagance in respect to money. At the very first opportunity let the scout pay be readjusted along sensible lines and with some consideration as to his needs and character.

CLOTHING.

The present clothing as issued to scout is very satisfactory. I assume that the scheme now in progress of having the khaki clothing made in Manila, in sizes obtained from actual measurement, will be successful and will be continued.

A few changes however suggest themselves.

The present campaign hat is not satisfactory for field service. It has never been satisfactory for the character of campaigning usually performed by native soldiers. In marching through thick cover it is impossible to keep it on the head. Besides it is heavy and expensive. A hat similar to that now in use by the constabulary would be much better. It is light, adapted to close country, and inexpensive. But still, it is not the best form of headgear and I would recommend the retention of the campaign hat until something is found not having the disadvantages of the constabulary hat, the most serious of which is its loss of shape after a little wear, causing it to crush down on the crown of the head, a serious matter under a hot sun.

It is hard to say just what form of shoe would be best for campaigning in the Philippines. I am convinced that there is no shoe made that will last any length of time in Samar. A moderately good shoe is just as serviceable as an expensive one. Continuous field work will put the expensive shoe out of commission almost as soon as the cheaper quality. There is no leather that is going to stand continuous soaking, combined with exposure to knife-edged rocks. A light leather shoe with a good strong sole, light bellows tongue, and about an inch higher than the present garrison shoe, is about as near what conditions demand as I can come with my present experience. Of course it would not last perhaps more than one or two good hikes, but neither will any shoe. Three days is about the life of the regulation shoe under conditions as found in Samar. Whatever shoe is adopted should therefore be inexpensive.

Some form of foot hold is absolutely necessary for mountain work. The most satisfactory scheme so far discovered that has come to my notice is the ordinary baseball plate. A number of officers have used these with great success. Something of the kind simply must be adopted. No form of leather cleat will answer and I believe that the baseball plate or a modification of it is the best solution.

Personally, I am convinced that the canvas rope-soled shoe is a failure. I discarded them after one trial. They furnish no support to the ankle, something that is most essential. They

promptly spread from soaking and hiking and so far as any support is concerned one might as well be barefoot. Every slip or misstep on a rocky trail means a painful blow, perhaps even a wound, from a sharp rock or thorn, against which this shoe is no protection. The rope sole instead of being a guard against slipping, is most treacherous, especially on grass or fallen timber. I usually carry a pair of these shoes for camp wear, while my others are being cared for. For this purpose they are excellent.

The canvas leggin is absolutely useless for field service. Never, in any of its various forms, has it been satisfactory, and the present abortion is only a little worse than the previous issues. It is a pretty safe rule that necessity is the mother of the best inventions and that what a man improvises to meet any particular condition cannot be improved on very much. The various expeditions in the Samar campaigns, both scout and regular, exemplified this principle in the matter of leggins. They went into the field equipped with canvas leggins; they returned with their bed blankets shorter, or narrower, by some six inches, and a blanket bandage where the canvas leggin had been, simply an improvised wrap puttee. It stood the test and it is the only leggin that will, for the class of field service required in the islands at least. It is the only leggin that will keep out leeches; that will not constantly keep catching on hooked thorns or coming undone. Furthermore, it has no shape to lose and always fits. Two pair can easily be carried so that each day's march can be begun with a dry pair of leggins, though this is a point of no importance. Just what form of this leggin is the best I am not prepared to say. Personally, I prefer the straight bandage, wrapped just as the ordinary roller bandage. A woolen leggin is probably the best for the field, although I have used most successfully a leggin made simply of a double thickness of khaki. I have used this for swamp work and found it most satisfactory. I have permitted my men to use these leggins simply to watch the effect. They have learned to wrap them with extreme neatness and they make an excellent appearance. They would certainly be a cheap leggin if found satisfactory. If this leggin is eventually adopted, as it seems likely that it will be, the shoe used with it should be an inch or an inch and a half higher

than the present garrison shoe so as to give the leggin perfect contact with the shoe top for at least two or two and a half inches.

As the scout is at present essentially for field purposes only, no other changes in the uniform are important. When the time comes, as it undoubtedly will, when the native organization spend a considerable portion of their time in garrison, some sort of simple, dressy garrison uniform should be devised; for the scout soldier is proud of his uniform and prone to "dress up" when opportunity offers.

The only other change that might well be made in the uniform is the use of the light woolen khaki colored shirt instead of the blouse for all purposes except ceremonies.

EQUIPMENT.

The present field equipment required for the scout soldier is simply ridiculous. He is supposed to carry everything required by orders for our regular infantry. Some scout officer, who was required to make a practice march under the orders for field instruction recently in force, had the curiosity to weigh his company. He found that the average weight of the individual soldier in that company was about one hundred and twelve pounds. When one compares this with the weight of the average infantryman and then considers that standing orders for the past few years have made no distinction between the equipment of the two, ridiculous is really a mild term.

The original scout was not troubled with equipment. He was required to carry nothing but his gun and belt. If he carried any rations, it was merely a few pounds of rice tied up in a handkerchief and fastened to his trousers' band. Every third or fourth man probably had a can of salmon or corned beef. There might have been half a dozen tin cups to the company, but empty salmon cans were much more popular. Some few canteens were distributed throughout the command. No one had any shoes or any semblance of uniform.

Now this was the other extreme. It resulted in much sickness (though not nearly so much as one might suppose) and lowered the efficiency of the command. There are many officers

who maintain today that it was a mistake to give the scout shoes. This is not correct. No man is at his best on the trail when half his attention is given to nursing a lacerated or festering foot, and that is what thirty per cent of my men were doing in the latter part of 1900 and early part of 1901, until shoes were issued.

From no equipment then, we jumped to an elaborate one that is useless or worse. The full field equipment for the scout at present weighs fifty-seven and one-half pounds. The average weight for the scout, as has just been shown, is one hundred and twelve pounds. This weight is correct for all the tribes except the Visayan, who will probably average somewhat heavier.

We have put on the scout over half his own weight and expect him not only to hike along cheerfully day after day but to be ready to jump in any minute and put up a good fight. A little observation as to just what the scout himself uses when in the field will give a pretty good idea of what he needs. Leaving aside the consideration of his arms for the present, the following equipment will be about all he requires:

A light woolen blanket. This is not an absolute necessity if an extra woolen shirt is carried, or some form of combined shelter half and cover is provided. The shelter half is of little use to anyone as a protection from rain and as a tent pure and simple it is of no use to the scout. When he uses it at all, he ties the ends in a gather and makes a hammock of it. This gives a good suggestion for remodeling the shelter tent in the scout's case. If a scout organization goes into temporary camp for several days, the men promptly construct shelter from the material at hand. In the cogon country, grass huts can be put up sheltering say a squad each, in a very short time. These make excellent shelter and will last for weeks; with slight repairs, even for months. In timbered country, pole and leaf shelters are easily constructed, so that all the scout needs in the way of shelter as part of his equipment is something for an over night camp. I understand that any number of schemes are being worked out by scout officers in line with their experience with the shelter half and doubtless some one of them will be adopted which will do away with the shelter tent and its worse than useless poles.

An individual mess kit for scouts is unnecessary. You can make them use it of course, just as you can make them do anything else with a little insistence and proper persuasion. But they don't need mess kits any more than they need overcoats. Two or three scouts will get around a single mess pan and get along all right with it, thereby saving much washing of dishes. The knife, fork and spoon, of course, are articles which are as essential to the scouts' well being in the field as brass bedsteads, and as they have been worrying along some time now without the latter it is to be presumed that they could manage without the knife, fork and spoon.

The original scouts had no mess kits. On taking the field the only cooking utensils carried were a few empty corned beef or salmon cans and about every sixth man had a small earthen ware pot concealed about his person somewhere. How these pots survived a ten or fifteen days' expedition I don't know and I don't worry about it. Of course they didn't *all* survive but there were always enough left to get along with. Now I am not advocating the earthenware pot, but its use simply shows that some sort of simple cooking utensil large enough to cook rice for four or more men is what the scout soldier needs. Something that can be carried by one man and will answer for four or more. The natural resources of the country will piece out the mess furniture. A joint of bamboo, for example, makes a good vessel for cooking rice.

A tin cup to every fourth man is enough. Each man should have a canteen. The mess kit should really depend on circumstances. If transportation is available, then a simple company cooking outfit should be taken. This could consist of a nest of small kettles similar to the camp kettle and a couple of frying pans or tins. In this case each soldier should carry no cooking utensils except possibly a small flat tin cup. The present tin cup is too large and its cylindrical form makes it hard to dispose of. If any of the smaller articles are carried, let it be the spoon. If no transportation is available, then one of two methods should be adopted or both worked together. The first is to give to each squad two vessels just large enough to cook, one the rice and the other the coffee, for each squad. Let them be of such a

shape that they will fit over the bottom of the knapsack (for a knapsack of some form is what is needed for a pack) and of unburnished metal, light weight. Make no provision for cooking meat, because the scout will cook it with his rice anyhow, or mix it with wild vegetables and make "gulay." He fries no meat.

The second method is to give each man a canteen of a flat oblong shape, with a tin cup that fits over the bottom of it and a single mess pan which fits over the side of the canteen, the whole enclosed in a canvas sack just tight enough to prevent rattling. Then each man is independent and he is not constantly losing the top of his mess pan or banging his tin cup against brush and trees on the march. This combination canteen should be carried on the back of the knapsack, just where the scout carries the present canteen. It should have lugs like the present canteen, so that it could be carried on the belt if the pack is not carried. With the squad mess pans, if a squad is detached they are independent of the company cooking outfit. The same is true of the individual mess kit but it is not so suitable to the scout's habits.

The very simplest form of pack should be used. The present haversack is entirely too large and the way it is carried, attached to the belt, is not satisfactory, though this has recently been changed for scouts. A small light knapsack carried well up from the belt and supported from the shoulders is what we need. Any large quantity of rations will have to be carried by transportation anyhow.

The cargadore is the best scout transportation, and there should be twenty-five enlisted cargadores per company at all times. These men could be secured for not to exceed twelve pesos per month and rations. They would form a nucleus for a larger cargadore train when actual field operations made this necessary.

It has been found that cargadores employed for some time with a company become much attached to it and can scarcely be driven away when their services are no longer required. They are loyal and give no trouble. When field operations become necessary and an attempt is made to hire cargadores in the dis-

affected region, it is almost impossible to secure them. This was the case in Samar. But the cargadores that accompanied the scout companies from Luzon to Samar were found most faithful and remained to the very end, although of a different tribe from the companies they packed for.

The cargadore is cheaper than any other transportation for scout work. It costs \$1.00 per day to maintain an American public horse in the Philippines. A pack mule may cost a trifle less and a native pony perhaps slightly less than the pack mule, but not much. Cargadores at twelve pesos per month would be cheap in comparison. They can go wherever the scouts can and as their loads are consumed they become valuable as trail clearers, litter bearers, and for work about camp.

It has been found that one cargadore can keep one scout in the field ten days, carrying his own and the scout's rations. Twenty-five cargadores could then keep one hundred men in the field two and one-half or three days, and if the men carried two days' rations each this would be extended to five days. This was found to be true in the most difficult of country where the extreme load for a cargadore was forty pounds. In anything like decent country this load could easily be increased to sixty pounds for the best class of cargadores.

With twenty-five cargadores at all times, when trouble actually occurred and cargadores were needed, these twenty-five could very easily find among their friends enough men to promptly fill the company train to one hundred if necessary.

While in garrison, the regular company cargadores could be used by the post quartermaster about the post for grass cutters, stevedores, and a hundred other things for which native labor now has to be hired at as high as one peso per day, or soldiers detailed on fatigue, a most mistaken economy.

The pack train at a scout post, during peace times, is practically a loss to the government unless it is used to supply the post, which is seldom the case. The cargadore train on the other hand would render valuable service, doing the work now performed by expensive native labor. Their presence would permit company commanders to have practically the entire strength of their companies available at all times, with the exception of a

clerk or two on duty in the supply departments. If a battalion, quartermaster sergeant, battalion commissary sergeant and battalion color sergeant were allowed for scout battalions, the detail of clerks from the companies would be no longer necessary and the strength of a company on its morning report would mean something.

The organization of a permanent cargadore train is one of the most important needs of the scout organization today and its consideration should be taken up at once.

At present the scout is armed exactly the same as our infantry. Although I may not be wholly in sympathy with the present new Springfield rifle as a scout arm, I prefer it to any return to the prehistoric. I have no sympathy with the idea that our native soldier should be armed with a very much inferior arm for reasons of possible unfaithfulness. If he cannot be trusted, then he had better not be employed at all.

The present remodeled Krag carbine as issued to the Constabulary I believe to be an excellent weapon for the native soldier. It is accurate and effective. Its scores have not been badly shattered on the rifle range so far by the new Springfield, though the latter is undoubtedly much the superior target rifle. This remodeled carbine with its bayonet is more nearly proportionate in size and appearance to the stature of the native soldier than any rifle I know of. There is, of course, the obvious drawback of having two kinds of rifle ammunition to look out for and the chance of their becoming mixed in an action and causing disaster. At any rate I believe every scout officer should have the latest model rifle and be thoroughly instructed in its use. He should be required to fire the regularly prescribed course of target practice and should be eligible to take part in the division rifle and pistol competitions, especially since, under the new firing regulations, commissioned competitors do not in any way interfere with the enlisted competitor's chances for the team and fire for medals only.

INSTRUCTION.

The instruction of scout organizations is at present carried out according to the official drill regulations and orders prescrib-

ing instruction for regular troops. It is a question as to whether this produces the best results or not. I believe in a great deal of formal, exact drill for native soldiers. It has a tendency to make them alert and preserves discipline. They need it far more than our regular soldiers. For this class of instruction, the drill regulations are all right. Aside from this, I am in favor of departing materially from the orders which govern the field work of the regular troops. The ordinary short practice march required by standing orders is of no value to the scout. The heavy equipment wears him out and he loses interest. In place of this, let the scout organizations take lengthy marches of two or three weeks with such equipment as their officers deem necessary. On these marches have them build several camps of the material at hand and remain in these camps several days at a time. Teach them to make their camps sanitary; instruct them in the simple devices for rendering doubtful water safe; for cooking meals without betraying their camp; and a hundred other things that will suggest themselves to every scout officer. Make the march a diversion as much as possible; let them hunt and fish and teach them how to hunt the game of their country properly.

The Filipino is no hunter; he hasn't the faintest idea about hunting as we understand it, and for that very reason he is no scout and never will be. But he can be improved some. Let the signal practice taught in garrison be put to practical use in the field and improvise signal practice adapted to scout work. The native soldier takes readily to signalling and rapidly becomes proficient in it, strange to say, retaining his knowledge of it longer than the average American soldier, to whom the whole thing is a bore.

Another thing that could be carried on to advantage on these marches is practical firing. Let the range instruction be made practical by estimation of short ranges and firing at objects where the effect can be seen. This assumes, of course, that all marches are made in practically uninhabited sections of the country, preferably the mountains.

A sort of rendezvous camp where several battalions of scouts could meet and remain together, or near each other, for several weeks in the dry season would be an excellent scheme. There

are many suitable places for such camps in the foothills of the mountains of Luzon and doubtless in other parts of the archipelago. Here scout officers could get together and try out schemes in equipment, methods of instruction, field work, target practice, etc. The ordinary company or battalion maneuver is of little benefit to scout organizations. The element of actual danger is lacking and this takes the incentive from the native and he cannot be made to show up at his best. This is only natural. The same applies to our regular soldier perhaps in a less degree.

The issue of General Order 101, War Department, 1907, prescribing the allowance of ammunition and material for target practice would indicate that a false impression prevails regarding the employment of the native soldier. This order gave him an allowance for target practice the same as the Indian scout and apparently regarded him as in the same class. The unfortunate name "scout" is perhaps responsible for this, although that is hardly a good excuse. The day of the Indian scout is gone. The native scout, as I have previously insisted, is no scout at all. His work in every respect is similar to that of our regular organizations. He operates as an organized company or battalion of infantry, under regularly appointed officers and fights according to the accepted theories of the art of war. Strictly speaking, the native scout organizations are merely native infantry. They should therefore be made effective as such, or their use discontinued. The day when we may be compelled to put our native contingent on the offensive against a foreign invader may not be far distant. Not so very long since it looked as if that day had already arrived. No soldier is effective until he can effectively use his rifle. The allowance of ammunition prescribed for scouts by the above mentioned order was about one hundred rounds of service ammunition per year, not enough to keep a good rifleman in decent form. When one considers that in the native soldier he is dealing with an individual who has absolutely no knowledge of the rifle and its proper use, this allowance is simply ridiculous.

The ordinary work of native organizations does not require sharpshooting or long range work. They should be made pro-

ficient in short range work of all kinds and a sufficient allowance of ammunition for this purpose should be made. The course suggested for scouts by Circular 1, Phils. Div., 1907, is excellent. It requires at least three hundred rounds service ammunition per man per year to carry it out. This was the allowance suggested by the division commander, who, being on the ground and thoroughly acquainted with scout organizations and their work, knew what they required.

The scout's idea of the proper use of the rifle at present conforms very closely to that of many of our military authorities including a number of our regular officers, to-wit, a large and continuous expenditure of ammunition in the general direction of the enemy without individual aim, commonly referred to as "volume of fire." If volume of fire is what we want, the native scout needs no training. All he requires is a rifle and continuous supply of ammunition and he will produce a volume of fire that cannot fail to please the most fastidious exponent of this principle. Just how effective this is we all know.

If he is to be made an effective rifleman according to American ideas, he needs practice, intelligent supervision, and plenty of it. If he is to have the practice he must have the ammunition. General Order 81, War Department, Series 1908, gives him a similar allowance to that of regular troops, which is sufficient.

OFFICERS.

Too much care cannot be exercised in the selection of scout officers. If the organization expands and becomes a permanent one, doubtless eligibility will be extended to a larger class of persons. For the present it answers every purpose. The selection of non-commissioned officers from the regular service should be made with care. Scout service needs active officers. It is useless to appoint men who, from age or other causes, are not physically able to perform their field duties. Age should not be a bar absolutely as many men are physically active at an age when the average man has passed his usefulness as a company officer. But the applicant's age should in every case be taken into consideration and young men appointed as far as possible.

Every officer appointed to the scouts, as they are at present organized, should have a good knowledge of company papers as every original will have to be prepared by an officer.

Promotion should be by seniority except where it is found that an officer has shown either by a lack of interest or ability that he does not deserve to be promoted.

Some inducement should be given officers for acquiring a good knowledge of the native dialect, especially that of their own organization.

Some scheme for retirement of officers will have to be found if the native contingent ever becomes permanent. Just what is best and gives justice to all is hard to say. Officers are not agreed on it by any means. That it cannot absolutely conform to the retirement laws of our regular service is certain. Service in this climate and under the conditions usually to be found at scout stations is going to break down and age the average American officer much more rapidly than conditions ordinarily found in our regular service. The proper age, pay, etc., for retirement under tropical conditions will have to be carefully worked out with justice to all.

If a permanent native force becomes a fact, there will have to be many things taken into consideration and the present regulations which govern the service of the officers of our regular army cannot be made to apply to officers serving permanently with native troops. This has been recognized by other powers with native armies and doubtless will be by the United States. The length of time an officer can serve continuously in this climate without material injury; the proper age for retirement of officers in this branch of service; the proper length of service for voluntary retirement; the proper proportion of pay for such retirement; the proper leave allowance for this class of service and a dozen other elements of consideration must be carefully weighed. Everyone realizes, I think, that the present law which gives scout officers double time for Philippine service upon re-enlistment in the regular establishment is due simply to the fact that no provision was made for retiring them as officers and they can therefore quickly attain the necessary service to retire as enlisted men usually with a good grade. In the meantime, while

attaining the necessary service, the scout officer receives good pay and can, if provident, save considerable of it. This allowance of double time could not of course apply with a permanent organization where the provision for scout officers' retirement, as such, existed. No law should, however, be passed which would deprive any officer of the benefit of double time provided he had entered the scout service under the present law, and all scout officers in the service at the time any new retirement law goes into effect should be specially considered and compensated for any loss in his length of service which such act might impose and for which he had every right to expect to receive credit.

I am not in favor of the appointment of any native officers under the present provisional organization. They are not a success and that is a plain statement of fact and can be substantiated. They get no results from their command and some other officer, probably junior to them, has to do their work. They lack the ability to command and do not hold the respect of their men. A man who might be an excellent non-commissioned officer is ruined by a commission. No native officer should have command of a company. This has been found to be the case in our Constabulary in practically every instance that has come to my notice. If there are native soldiers who should be rewarded, a way should be found which, while it rewards fully an individual, will not at the same time prove a detriment to the service. There can be no merit in any system which, in order to reward one individual, may ruin the discipline and materially lower the efficiency of an entire company of soldiers. They might be appointed officers and put into a secret service system, where they will exercise no command and at the same time will perform valuable service and service for which they are best fitted. Some such service is needed and is now maintained in a way in the Constabulary. But whatever is done, keep them away from command of organizations. If the time comes when they must be appointed, as in the case of a large permanent native force, let their status be that of the native officer in the British Indian service. Theirs is the result of years of experience, which our country has not had, and is worth considering.

DISCIPLINARY MEASURES.

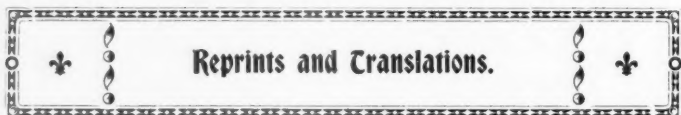
The present method of applying disciplinary measures to scouts by means of the general court-martial is a mistake. The same is true of the limits of punishment as prescribed by the court-martial manual. When a scout soldier goes up before a court composed of officers without an intimate knowledge of the scout and his characteristics, one of two things happens. Either the accused gets off with no punishment, or he gets too heavy a sentence, usually the former. There are scarcely ever enough scout officers available for a general court-martial, hence the scout soldier seldom comes up before his own officers for serious offenses. In order to properly mete out justice to the native soldier, an intimate knowledge of his character must be known both as an offender and as a witness. This knowledge can only be acquired by long experience with scouts and one who has never served as a company officer in a scout organization cannot acquire it.

The limits of punishment as prescribed in the court-martial manual are not as a whole applicable to scout soldiers, cut in half as they are in his case. Company officers find that for this reason the summary court is not very effective. The punishments referred to were prepared for an entirely different class of men.

Practically every scout officer I have consulted is in favor of doing away with the general court for scouts, and retaining the summary court with a considerable latitude as to punishment. To take the place of the general court let a court be authorized consisting of three officers, the commanding officer to be president in case this seems advisable and he has not previously investigated the case or preferred the charges, and let this court be authorized to punish at their own discretion, awarding punishment commensurate with the offense and the native character. Let this court be without record further than finding and sentence. No injustice will result from a court with such powers and better results will be obtained.

In place of the summary court several officers have suggested that the commanding officer hear all cases and award punishments now ordinarily referred to the summary court. I see no reason why this should not be a good plan.

Thoughtful scout officers who have been handling these men for some years do not make statements on vital points such as this without reason. Their opinions are the result of absolutely practical experience and are not theories. The average scout officer does not belong to the theorist class. Their ideas therefore should be given the greatest consideration.



NOTES ON THE COMPOSITION OF THE CAVALRY REGIMENT.*

BY MARZIALE BIANCHI D' ADDA, COLONEL, RETIRED, ITALIAN ARMY.

The subject is trite, has been worn threadbare, has for many years been an object of discussion, but for one reason or another no modification has ever been brought to the composition of our Cavalry regiment. It is well, however, to remember that up to the present time the formation for the regiment of five rather than six troops has been a subject of discussion, of argument; on the other hand, now that the debated question is brought again to the front and there seems no doubt that a decision will be reached concerning it, there have sprung up supporters of the regiment of four troops and even some who believe in small troops.

The question, though old, belongs to the present time. We consider it opportune therefore, to call attention to it—not that of the older men of the arm who know more about it than we do, but rather of the younger officers—to the direction in which it is moving, to the importance of the problem, and to the different solutions it may have.

Meanwhile let us set down first and above all the ideas in accordance with which we shall shape our reasoning, our argument; headings that are not the usual expressions made to fit expectations but rather principles, unassailable axioms, admitted by all to be so. These are:

*Translated from RIVISTA DI CAVALLERIA of June, 1909, by Major J. F. Reynolds Landis, Sixth Cavalry.

1. The employment of the arm in war determines its organization, its instruction.
2. To carry out its varied and important duties, Cavalry must be united in large units (masses).
3. The organization of Cavalry is most closely connected with its being put on a war footing; because young horses and those that have just been bought or requisitioned cannot, should not be used to bring Cavalry troops to a war footing.
4. Cavalry today which is not in every way the best is not worth the expense incurred.

A REGIMENT OF SIX TROOPS TO BE PUT ON A WAR FOOTING WITH SIX TROOPS.

This is the organization in force in Italy, in Austria-Hungary (even in the regiments of the "Landwehr") and in Russia. The sole but serious fault which emanates from it, and which up to a certain point seems warranted, is that the regiment is too heavy and therefore difficult to command and maneuver in operations. On the other hand it presents the appreciable advantage of economy and it is exactly for this reason that it has been maintained up to the present time in Italy. It was maintained for many years in Austria-Hungary without thought of modifying it and it was adopted in Russia a few years ago when, wishing to increase the Cavalry considerably, they preferred, rather than make new regiments, to bring the regiments, which were all of four troops, up to six troops.

It must be said, however, that while the Italian troop has the weakest organization, considered with respect to those of the foreign Cavalries, it is only in Italy that the regiment of six troops is considered of enormous heaviness. This results, according to our opinion, from two facts: First, that the greater part of our drill grounds are not so large as to permit commanders in regiments, field officers and captains to acquire the necessary practice in the evolutions of the regiment, so that they are somewhat at a disadvantage when they are called upon to maneuver in larger fields; second, that really on most of our grounds there is so much cover that considerable difficulty is encountered in directing and maneuvering six troops properly. But even such

difficulties do not seem to us insuperable when we might maneuver often over the open fields; they would, on the other hand, probably be almost insurmountable to the Cavalry of an adversary and that would constitute a great advantage for us.

We should, however, be perfectly satisfied if, on account of the most important question of putting it on a war footing, there should be adopted for the regiment another more suitable formation.

We held to the correct idea (it was forced upon Italy in a very special way through the almost absolute lack of saddle horses fit for service) of making a single assignment,* in order to insure the troops being readily put on a war footing with the personnel and the horses already in the ranks. We have, that is in peace—according to our organization—a greater number of men and horses than is needed for a war footing, so that we may be able to send to the depot for this or that reason those not fit to take the field at once.

We solve thus, in the most practical manner feasible, the difficult question but escaping Scylla we fell into Charybdis. We avoided the first obstacle but we did not escape the second and we formed a troop for war service with 120 mounted men and therefore too weak to confront those of 150 mounted men of the other European Cavalries.

We do not delude ourselves that by increasing the peace organization it will be possible to remove the inconvenience we have complained of, as we shall see better later on.

It is to be noted that we are favorable to a more suitable formation of the regiment but on the sole and single condition that it shall not be diminished even by a single one of its troops on a war footing; now too few in number.

A REGIMENT OF FIVE TROOPS TO BE PUT ON A WAR FOOTING WITH
FOUR TROOPS.

It is the ideal formation, which is in force in Germany and in France, except that in Germany the troops all have the same strength and receive the same instruction. It is only after an

*That is of having the same number of troops in a regiment on a peace and on a war footing.

order places them on a war footing that lots are drawn to determine the troop which is to become the depot troop, which is to furnish to the other four troops the men and horses that they need to place them on a war footing, and which will receive from these latter the men and horses that are not fit for service. In France, on the other hand, the fifth troop has in peace the functions of a depot troop, and this difference is so decided that it no longer permits any comparison between the French and the German organization. The German, as we said above, comes up fully to the ideal; the French having come to an agreement upon the vital point of this organization adopted it only in name, on paper; in fact, the French regiment is made up of four troops both in peace and in war.

Certainly in France they need take advantage of the great wealth of horses which they have at their disposition and have taken steps accordingly; but if we admit that such a system might be worth something in France, we could by no means admit that it would be so in Italy.

The German troop—and it is important to notice this—is absolutely certain to put a hundred and fifty mounted men on a war footing. We do not think that the same could be said of the French troop. Germany is also well off for horses and certainly would not deprive herself of one hundred troops, the expense of which she bears in time of peace, if she were not fully convinced—after experiments made in 1870—of the necessity for the disposition she has adopted for placing her Cavalry on a war footing and of the excellence of it.

A REGIMENT OF FIVE TROOPS TO BE PUT ON A WAR FOOTING WITH FIVE TROOPS.

In no great army does this formation of a Cavalry regiment exist and it is the one now proposed for our regiments.

We can at least notice the following respecting it:

Compared with the six-troop regiment the difference is too slight—one troop only—to remedy the deplorable heaviness of the regiment and its lack of maneuvering capability.

In order to put ourselves on a war footing it causes us to keep up the present system which is the best—provided troops

have always the number of horses prescribed by the peace footing—but which carries with it the irremediable defect of producing troops that are too small.

It does not exclude the probability that, urged to it by necessity, we shall have to have recourse to the expedient—as was done in 1866 when all the sixth troops were broken up—of breaking up the fifth troop to reinforce the others, diminishing in this way, and markedly, the number of troops to be put in the field.

From this therefore there is no escape; either we go into the campaign with small troops, a defect which it seems now they intend to remedy; or we finish by adopting the German system of putting four troops on a war footing, with the enforced consequence of reducing the strength of our Cavalry which we repeat—and we shall never tire of repeating it—is already so little.

But objection may be made that there is no real intention of bringing the strength of the troop on a war footing up to 150 mounted men; that it is the intention to bring them up only to 130. Consequently there is nothing to prevent keeping up the present system, we will need only to increase the number of horses on the peace footing. The reasoning apparently is perfectly good but you forget that the peace footing of the troop—both for men and horses—must be kept within suitable limits because if you go beyond them you seriously endanger the instruction of the one, and the training of the other.

To be perfectly sure of putting a troop on a war footing with 130 mounted men it would be indispensable to have its total on a peace footing 160 horses and 175 men and that notwithstanding the fact that you would always be obliged to count upon young remount horses of the preceding year. We will not enter into particulars; it is sufficient to remember that with the officers of our troops, with the limited means for instruction in our barracks and drill grounds, with the numerous garrisons in upper Italy where usually, in the cold months of winter, imparting instruction constitutes one of the most serious problems to be solved, we would cause to spring up a very difficult situation. It is perfectly well understood that we start with the supposition that for the Cavalry the three years term of service is retained; that if, on the

other hand, even for it the two years terms were adopted—unless large sums were granted for increasing the pay of non-commissioned officers and old soldiers—in a few years there would be no occasion to talk about Cavalry; it would of itself have disappeared

The conclusion to which we cannot help being brought is evident. With a regiment formed in peace of five troops if it is put on a war footing of four these will be sufficiently strong; on the other hand, if we wish to put all five troops on a war footing they will, of necessity, be very weak.

A REGIMENT OF FOUR TROOPS TO BE PUT ON A WAR FOOTING WITH FOUR TROOPS.

We shall not go into details about this formation which would be the most unfavorable one for the arm. We shall have to repeat what we have said above respecting the regiment of five troops put on a war footing with five troops but increasing the dose because there would be excluded any possibility whatever of selecting one troop to reinforce the others; an expedient which in the worse suppositions the regiment of five troops could at least have recourse to. We firmly believe that there are no supporters for the regiment of three troops; of a regiment, that is, having a less strength than half an Austrian regiment.

Let us go on to another important question, to that of small troops. Some writers would not only be pleased to take into the field small troops but bring forward history in support of their opinion. The troops of the Napoleonic Cavalry, they assert, were always weak and, in spite of that, they did what they did.

We do not contest in the least the truth of this assertion but that proves nothing if not what follows: that Napoleon found great difficulties in giving to his Cavalry the numerical strength *which it was his intention that it should have*, since Napoleon, thoroughly cognisant of the enormous losses that Cavalry suffers in war when it is carrying out its many duties as he maintained they should be carried out, would have wished troops of the greatest strength possible.

In his correspondence there are hundreds of letters and orders respecting the organization of cavalry and a great many

also concerning the number of horses in a regiment and in a troop, and the ideas of the great captain upon this subject. We shall not delay by repeating or summing up many of these letters; the two following, which seem to us exhaustive, will be sufficient. On the 21st of November, 1806, Napoleon was writing from Berlin to General Dejean, Minister of War: "Even if the troops had 200 horses in them we should never have too much Cavalry and the regiments would never be strong enough." (Letter 11291.)

The 8th of January, 1807, from Varsovie he wrote another letter (11585) to the same General Dejean in which he spoke only of Cavalry, of providing it with men and horses. "My intention," he writes, "is to have in the month of May, 80,000 horses," but he does not wish new organizations created; instead they were to enlarge regiments, bringing them up to 1,000 horses. The troops of heavy Cavalry, fixed at 180 men, were to be brought up to 220. "The troops of light Cavalry even, are now ridiculous; there are not 100 men present under arms in line. Should they be brought up, through organization, to 300 or 350, there would not be the least trouble in maneuvering them." Then he adds: "It is absolutely forbidden above all things to buy horses less than five years of age."

Note carefully that in the same letter he also says: "It is my intention to have as many horses as I can get men," and we reproduce these words in order that opponents may not state that Napoleon was talking of men and not of horses. Mentioning the men, the great captain distinctly refers to horses, it was therefore *his intention* to have troops of heavy Cavalry of a strength of 220 men and 220 horses, and that of light Cavalry even from 300 to 350. The fact is, however, that in a general way, the Napoleonic troops of Cavalry were really small. We have here under our eyes the *general situation* of the *Grand Army* for the campaign of 1805, undated; that for the campaign of 1807 dated April 1st, 1807; and, finally, another relative to the war of 1809 dated July 1st, 1809. From the first and the last of these situations we find that there are not two regiments which have the same strength; their strength, however, is always very small. With a few exceptions—especially in the Cavalry of

the Imperial Guard—troops appear to have a strength of a little more than 100 men and sometimes even less; troops really *ridiculous*, as Napoleon says. On the other hand, in the situation dated April 1st, 1807, probably as a consequence of the above mentioned letter of the 8th of January, 1807, and above all, we believe, on account of the many horses of the Prussian army which after Jena fell into the hands of the French, things appeared much better: troops have a strength which varies between 130 and 150 men; some even (besides those of the Polish regiments and those of the Spanish division) have a total that is over 200 men.

We are not opposed to small troops. They are suitable to modern tactics which, for Cavalry, requires an agility and a quickness of maneuver much greater than that of the Napoleonic era. In this case, however, we must absolutely be able to fill up at once the numerous gaps which war produces in the ranks of the Cavalry.

The Emperor Napoleon could rely upon the equine resources of half of Europe, which was under his orders, and likewise upon abundant spoils obtained from the enemy.

Notwithstanding this, his solicitude was infinite and the positive orders emanating from him went into minute details respecting the gathering of great quantities of horses in depots which he established for them in the rear of the army in the field. Today, even in this respect, things are very much changed; each state must count upon its own equine resources, and these, in Italy, as is well known, are very few. It is therefore of the greatest importance for us to go into a campaign with troops as strong as possible; in the first place to confront in almost equal conditions the large troops of the enemy; secondly, so that the troops as a result of the great, inevitable losses that will take place in the first days of the campaign may continue to be troops and may not become skeleton units no longer fit for efficacious service.

Up to this point we have concerned ourselves with the important question of the composition of the regiment and of the troop only so far as relates to the putting of these units on a war footing, mentioning only casually the other side of the

problem, that of instruction; and it is not our intention even now to linger over it.

From our regulations there has already been cut out, as far as possible, everything that finds no application in war but the regulations require that men and horses shall be, as accurately as possible, instructed and trained so that they may be prepared to carry on the varied and numerous duties expected of them in the campaign. The service of patrols, of reconnaissance, combats (from those of small parties up to those of large bodies of Cavalry), on foot and on horseback, are not possible if the troops—officers and men—are not perfectly instructed and the horses thoroughly trained and in condition.

It is on account of this indispensable necessity for instruction that we said above that the strength of the troop could not exceed certain limits or it would not be in condition to impart the prescribed instruction to an inordinate number of recruits and young horses, and to complete at the same time that of the older men and of the remounts of the preceding year.

We do not add anything else because we are writing for Cavalry officers who know about these things as well as we do. We cannot, however, do less than make the remarks:

(a) That there would be no supporters of the two-year term of service even for Cavalry if those called upon to decide the important question had commanded a troop, even though for a very short time.

(b) That it is high time to provide a remedy for the inconveniences springing from the organization of the troop which, while it requires a division into four platoons, provides only three subaltern officers.

We understand and duly appreciate that certain conditions respecting promotion are at the bottom of that restriction but the lamented inconvenience could easily be overcome by entrusting permanently the command of one platoon to a non-commissioned officer.

We have also said—and we have put it among the several headings—that the employment of Cavalry in war requires that it shall be united in large units; an axiom, now, to delay over

which, in attempting to demonstrate its truth, would be like wishing to burst in an open door.

Consequently, he who loves the Army and the Cavalry and is keenly concerned in their interest, cannot but rejoice greatly over the projected creation of several divisions of Cavalry. We really would have desired that all our Cavalry should be united in divisions to be attached to armies; assigning to infantry divisions detachments of cyclists to take the place of divisional Cavalry, except that there might be temporarily detached with any Army Corps a Cavalry unit of greater or less strength, of which it had need for the time being. But this question is going beyond our subject and therefore we shall not go any farther into it; it is important for us to call attention only to the necessity for regiments and troops of sufficient strength both on their own account and because they go to make up *really* those large units of the arm of which we have need.

We should like only to have you keep in mind that whoever our opponent may be our Cavalry divisions will find themselves confronted by divisions containing a greater number of men; of the strength of 24 troops of 150 troopers each. Not only therefore will our Cavalry be called upon to take the field with a marked numerical inferiority in respect to the enemy, but even its units—both small and great—will not be of the same power as those of the adversary, to say nothing of the slight probability of being able to fill up the very numerous gaps which the first two weeks of the campaign will produce in the ranks of the horses.

We did not intend to examine the question of the organization of the regiment and of the troop in order to present concrete propositions respecting them. As we clearly set forth in the beginning it was our intention to discuss only the different solutions of the problem and that is what we have tried to do with the greatest possible attention to the ideas, without consideration of their authors or supporters.

For the rest, an appropriate solution of this question would be in no wise difficult if we could spend what was indispensable to it; the difficulties all come from the increase in expense which would be attendant upon it.

A rational organization for the Cavalry is simply, solely, a question of money; and if you are not willing to loosen the purse strings it is wholly useless to think of modifications, of changes.

It is not sufficient to be inclined to spend something more; it is necessary to give the whole amount that is strictly needed.

Therefore, as a conclusion, we permit ourselves only to say, that before changing the present organization of the regiment we must consider well the consequences which will spring from it in placing the division on a war footing and also in settling the composition of the division.

THE SHORTCOMINGS OF THE RUSSIAN CAVALRY ON THE YALU IN THE SPRING OF 1904.*

BY BARON V. ESEBEK, CAPTAIN AUSTRIAN CAVALRY—NINTH ULAN
REGIMENT.

*(Translated from the Austrian Cavalry Journal, April, 1909, by H. Bell, M.S.E., Army Service Schools.)

Appearances are against us! The large "manoeuvres du centre" in France show that Army B, which was much the weakest in cavalry (General Millet had but two corps cavalry brigades), prevented the two independent cavalry divisions and the two corps cavalry brigades under General Tremenau from gaining an insight behind the line. This fact, which of course is not very flattering to our arm, causes "*La France Militaire*" to point to the analogy of this to the situation on the Yalu in May, 1904. As such a comparison may easily cause the casual reader to conclude that today cavalry is unable, with the means at hand, to pierce the hostile infantry screen, I may be allowed to discuss anew this epoch of that campaign—so often written about—which diminished, for the first time, the luster of the Russian cossacks and which, in the opinion of many, threw a cloud on the future of our arm.

What splendid opportunities offered themselves to an energetic cavalry leader during the Japanese advance! That not a

single raid or coup was undertaken, nor even attempted, by Mischtschenko's 11 cossack squadrons against the bridges which the Japanese of necessity had to throw, against the widely separated magazines, against the supply depots, is the more inexplicable when it is considered that Kuroki's nine squadrons were widely dispersed and bound down by special duties. But we should also not forget that the Russian cavalry was hastily organized into larger units and consisted in the main of *reserves* and we should not regard it as a model for modern cavalry.

The eastern detachment of the Manchurian Army on the Yalu had at its disposal more than 22 sotnias, equally divided on both wings. Of those on the right wing General Mischtschenko had already, on February 17, crossed the river with the Transbaikal cossack brigade in order to reconnoiter towards Antju. The battery attached to his command could not keep up, on account of the bad roads, and had to be sent back to the north bank. Kasan was reached by patrols on February 24 and on the 27th touch was gained with the Japanese advanced troops. On February 28th an engagement ensued, lasting an hour and a half, between six *dismounted* sotnias and four dismounted Japanese squadrons, which the Russians broke off on the approach of the Japanese infantry. Without at all being forced thereto, Mischtschenko thereupon retreated and voluntarily abandoned the south bank of the river on April 3. It is undoubtedly true that the intention of the Russian general headquarters to engage only in a delaying action on the Yalu and Kuropatkin's anxiety about his line of retreat, which cropped out in all of his orders, had a great influence on Mischtschenko's action; but neither one nor the other ought to have influenced him sufficiently to forget his duties as a cavalry leader and to abandon the touch he had gained with the opponent. On April 2 the first hostile patrols reached the Yalu; on the 4th—that is one day after the Russian cavalry brigade had crossed back over the river—the Japanese advance guard cavalry appeared there; on the 8th, the advanced infantry troops, and on the 14th, notwithstanding the unusual high water, the entire Twelfth Division was concentrated there. Of all these events the Russians received information only through Korean spies; for after the Russian cavalry had retreated and taken up

its bridges the obstacle in front of the Russian position became of great advantage to the Japanese; the Yalu becoming a mask for the Japanese, so to speak. With the Japanese concentration south of the Yalu once completed, the Russian near reconnaissance naturally had to come to an end. Reconnoitering detachments sent thereafter across the river encountered the enemy everywhere. The entire Russian cavalry should have tried its very best then, without regard to its own lines of retreat, to get around the flank of the opponent and operate against his communications to the rear. Even if in doing this it would have lost some of its fighting power, the results achieved would have been of far more value than the mere defensive observation with which Mischtschenko's brigade had to content itself behind the river. The excuse has been made that Mischtschenko's squadrons found no important cavalry opponent, but only infantry, and that the terrain precluded movements of cavalry—even that of single troopers—off the mountain roads. I believe the true reason is a different one: In the work of a high ranking Russian cavalry officer concerning the employment of cavalry in this war I found an explanation as follows: "On account of the very inferior horses, which are small and better suited to draft than cavalry horses, the Transbaikal cossacks ought to be called *mounted infantry* pure and simple." Cavalry which regards its most noble arm as a mere means to carry its fire power to the vicinity of the enemy, which does not regard the horse as its *main arm*, may possibly be able to perform good service in a defensive screen, but will never be the *eye* of the army. It appears strange that in the very few encounters between the opposing reconnoitering parties, both parties dismounted as a rule and resorted to the carbine.

It would, however, be wrong if we would look on this as a maxim for our future conduct; the character of the Korean mountain country precluded enveloping movements; but in open terrain the cavalryman who dismounts to fight on foot gives all advantage to a quick and energetic mounted opponent. As many of our officers are inclined to believe that in times to come we will be but mounted infantry, basing their belief on experiences in Eastern Asia, it seems to me of value to explicitly

point out that the Russian near reconnaissance from the Yalu position was invariably a failure, in spite of the fact that a mounted detachment of 140 rifles was attached to each Siberian rifle regiment. This gave for tactical reconnaissance eight such commands which ought to have been sufficient to perform all the tasks of divisional cavalry had they not lacked the essentials of cavalymen. The well mounted, well drilled cavalryman will always and at all times be the best organ for reconnaissance, as is proved by the failure of the Russian reserves and cossacks, and is further proved by the work of the mounted rifle detachments—but give these same cavalymen blooded horses, drill and educate them properly and inspire them with confidence in the superiority of lance and saber, and see the difference.

That the mounted rifles and reserve cossacks were very deficient in the essentials of good cavalymen can be seen in more than one of Kuropatkin's orders by reading between the lines. In a telegram sent to the commander of the East Detachment, for instance, Kuropatkin says, "The passive observation may lead to disastrous catastrophies." Considering events on the Yalu we may say that the value to the defender of an obstacle in front is very questionable when the obstacle serves only to interrupt contact with the enemy and screens the latter's intentions.

After the middle of April there was a Russian reconnoitering detachment on the left bank of the Yalu and on May 1 it had reached Antju, being consequently lost to the army for reconnaissance during the battle on the Yalu. This was a flying column formed of 1 squadron and 2 mounted rifle detachments, under Lieutenant-Colonel Madritow, which had crossed the Yalu on the 15th of April on boats and had sent out patrols from Tschosau. It is true that these patrols gained touch with Kuroki's right wing, but were unable to learn anything of value; all their reports being based on information received from Chinese spies. When Colonel Madritow saw himself endangered on the 26th by the Japanese advance he abandoned his very favorable post; instead of debouching to the northeast and so remaining on the hostile flank he went south around the Japanese right wing to operate against the hostile line of com-

munications. Thereby his detachment voluntarily abandoned the exceedingly important observation of the flank and could find out nothing concerning the Japanese preparations for crossing the river and the measures taken for the advance stages of the battle on May 1st.

The Russian cavalry of the left wing—2 regiments under Colonel Truchin—had received orders from the commander-in-chief to send patrols across the Yalu and take up connection with Colonel Madritow's patrols. This was done on April 25. On April 24 Colonel Truchin reported that hostile detachments had crossed the river at different points without his patrols being able to ascertain their strength, or even the branch of the service they belonged to. Colonel Truchin had orders to fall back if stronger detachments crossed the river to cover the route of retreat Kuan-Diansan. In place of doing so he fell back on the 28th on the left wing of the Russian Army, so that the line of retreat mentioned was entirely unprotected. When the cavalry advanced towards that line the next day it reported that the enemy was already entrenching in the mountains of Husan between the Yalu and the Liho and it was also seen that mountain artillery had been placed in position on the north bank of the Yalu. In spite of this Lieutenant-General Sassulitsch, commanding the Eastern Detachment, was still of the opinion on the morning of May 1st that the main Japanese attack was to be looked for from the south—from Witju—and it should certainly have been expected of the cavalry of the left wing to perceive and report in time the enveloping movement of the 12th Japanese Division. The report sent by the East Detachment to General Headquarters on April 30, full of uncertainty of the situation, was judged in no unmistakable terms by Kuropatkin. His reply to General Sassulitsch is given verbatim here on account of the lessons it contains: "The main requirement for the success of our operations is exact ascertainment of the enemy's strength and position. From reports received so far I do not see that the observation duty is being properly carried out—a duty which should not cease day or night, to ascertain movements of and measures taken by the enemy. Certain definite points should be selected for observation and assigned

to specially suitable officers. Close touch with the enemy is of paramount importance. According to your report Colonel Truchin's two cavalry regiments are performing but little in this direction. Transmit this opinion of mine to both cavalry regimental commanders. I further want you to have full knowledge of everything happening at the different—necessarily separated—parts of the Eastern Detachment, and to see that connection is kept up between them. In the case of Colonel Truchin I miss the endeavor and ability to keep up this connection."

The failure of the Russian reconnaissance and the scant reports sent in by the cossack patrols teach us to attach the highest value to the education of our mounted messengers and patrol leaders; we see here that the inborn abilities of the cossack which serve him well as horseman and rifleman, are offset by his lack of intelligence and we see also that no matter how good the natural material is, it will be found wanting in tasks set in war unless properly trained and improved in time of peace.

On April 24 the technical preparations for forcing the Yalu crossing had been finished. On the 25th Japanese torpedo boats and gunboats had entered the mouth of the Yalu, silenced the batteries on the north bank there and facilitated the entrance of vessels loaded with bridging material. During the night of April 25 and 26 infantry crossed on pontoons to the islands, in which operation, on the Kurito Island, a Russian mounted rifle detachment was surprised and lost all of its horses. On the morning of the 26th Kuroki's army was separated from the Russian position only by the western arm of the Yalu, but without the Russian headquarters was still in ignorance of the enemy's intentions and disposition of forces, although the latter had already commenced to throw bridges at Witju. On the evening of the 27th General Sassulitsch still believed that but small hostile observation detachments had crossed the Yalu. A reconnaissance of the terrain between the Yalu and Eiho was set for the night of April 27 and 28; this terrain was in the hands of the Japanese advanced troops on the 28th. To ascertain how far these had advanced on the right bank a high ranking general staff officer was sent with one battalion, two mounted rifle detachments and two guns into the hills of Husan across the Eiho.

This detachment drove back an outpost company of the Japanese Guard division and succeeded—though fired on by a battery which had gone into position north of Witju—in intrenching itself on the Tiger hill and holding its position there until the morning of the 30th. A second reconnaissance sent out the same day, of one battalion and two guns, was resultless for Russian headquarters was still in ignorance of the enveloping movement commenced by the Japanese 12th Division. To keep this movement concealed as long as possible the Japanese batteries accompanying the 12th Division, which made excellent utilization of artificial cover, did not open fire until the Russian batteries had betrayed their position. They opened fire about 10 a. m., April 30, and within an hour and a half the Russian batteries were silenced and the Japanese batteries kept the Russian position under fire until 5 p. m. Now General Sassulitsch could no longer be in doubt that Kuroki was doing more than a simple demonstration. During the night of April 30 to May 1 it had been ascertained that the Japanese Guard Division and the Second Division were crossing the river and this fact was reported to the commander of the Eastern Detachment. There could now be no doubt but what a general attack would take place on May 1st. We need not go extensively into the course of that battle, in which the cavalry on both sides played but waiting roles, it has been portrayed by more fluent writers than myself.

Kuroki had ordered the attack to start at 8 a. m.; shortly after 9 a. m. the Russian position was in the hands of the Japanese; the defenders evacuated the position when the Japanese got to within 400 meters of it; only at a very few places did the bayonet come into use. The artillery of the Japanese Guard Division immediately unlimbered in the position evacuated by the Russians. During the retreat the lack of connection and communication in the Russian position was fatal—the separate defensive groups retiring without mutual support. In this manner a battery of the left wing, retreating without infantry protection, came under Japanese infantry fire at 600 yards range and lost all of its horses and guns; another battery became stuck in a narrow defile and fell into the enemy's hands—clear proof that there had been no reconnaissance in rear of the position.

Separate Russian battalions, seeking a defensive position without any connection with other troops, saw themselves continually outflanked by the Japanese infantry. This then was the time for the cavalry to save their honor, if it could not save the fate of the day. But the 22 sotnias of the Eastern Division were 80 kilometers away from the battlefield. Only late in the afternoon was Mischtschenko's brigade called up from Dagushan to Piamyn. Granted that the terrain, and possibly also, that the character of the Transbaikals did not allow proper and correct utilization of the cavalry on the battlefield, the *carbines* of these 22 sotnias, if concentrated in *one* position, could have developed a fire power sufficient to protect the retreat and materially lessened the losses of the exhausted battalions which had fired away their ammunition. Placing the cossack brigade behind the *right* wing caused the premature retreat of that brigade behind the stream, for the *wrong* disposition of this force was the result of inefficient and incomplete reconnaissance.

The catastrophe would have been complete, had the Japanese not stayed in the captured position with their Second and Guard Divisions until 1 p. m.; the 12th Division only remained at the heels of the retreating Russian left wing and struck its line of retreat in the flank.

Only at 1 p. m. the Second and Guard Divisions took up the pursuit. About 3 p. m. they encountered serious resistance at Harmattan, where the 11th Rifle Regiment had taken up a position. Towards 5 p. m. the remnants of the Siberian battalions reached the line of communications where the rear guard was taken over by the 10th Rifle Regiment which had been called up from Antung. After dark a rest was had for two hours and then the march continued unmolested to Foenhuant-schan.

Although the Russian cossacks were far away, the 9th Japanese squadron did nothing to molest the retreat of the demoralized Russian infantry. This shows clearly that the Japanese cavalry was nothing more than mounted infantry. What a pity that an arm of such high moral quality was deficient in the best of all soldierly virtues, namely the ardent desire to take the offensive and the love of the saber! However, we ought not to

blame the Japanese cavalry too much, for their horses were entirely too small and weak. Only on May 3 the Japanese cavalry of the 1st Army advanced on Piamyn, the main body of the army, which had spent the night of May 1 to 2 on the battlefield, followed its cavalry on May 4. By that time the Russian Eastern Detachment had the mountain passes on the road to Liaoyang in its rear and was in safety. By May 11 the First Japanese Army was concentrated at Foenhuantschan and remained there till June 23.

So much for history. Now a few words concerning our personal views: If we, on account of our military education and the achievements of our sires, feel justified in criticising an unfortunate army, we should not do so without giving that unfortunate army full credit for fulfilling its duty and willingness to sacrifice itself. Both these attributes were inherent to the Russian *soldier* beyond the shadow of doubt. We can be honestly jealous of those who had a chance to receive the reward of their peace training in front of the enemy. It is true, there is no reason for our being pessimistic; that our "Africans" have lately proved to the world. However, the events of a century ago, which the year 1907 brought to our remembrance, caution us not to throw aside in disdain the catastrophies of the Manchurian army, but to draw therefrom lessons applicable to our situation.

The battle on the Yalu which was the overture in the East Asiatic drama, already showed the line of action ever recurring in the course of the campaign—the defensive. The disadvantage of that—when opposed to an energetic attacker—increased on the Yalu by the Russian reconnaissance cavalry recrossing the stream prematurely and leaving the commander-in-chief in the dark as to the measures taken by the attacker. This led to a wrong disposition of his forces behind the defensive sector, which became disastrous in the absence of all connection within the position. To justify the cavalry to some extent we will state that General Sassulitsch's orders from general headquarters were "not to engage in an unequal battle if ever possible, but to hold the position." Had Mischtschenko's cavalry remained far to the front to the last minute, it undoubtedly would have succeeded in learning the enemy's dispositions; and General Sas-

sulitsch thereby might have been able to either evacuate the position in good time and in good order or to call up sufficient additional troops to hold it. Madritow's detachment, which was the only body of troops on the left bank of the Yalu when the Japanese advance troops arrived there, was too weak to assure support to its patrols and was forced to retire.

It is possible, and very probable, that a future European war will assume the shape of *position battles*. If so, the possibility decreases for our arm to interfere frontally. With the concentration of enormous armies behind a fortified position, however, critical moments will become more numerous, caused by difficulty of replenishment of ammunition, bringing up supplies, etc. And there then lies the field of activity for strong bodies of cavalry—divisions and corps—to cut the extensive hostile communications to the rear, the most vital spot of a modern army.

One thing we must not forget: Neither on the Yalu nor later in the course of the Russo-Japanese War has either cavalry entered the original domain of cavalry, the pursuit! The Russians had no opportunity for that, the Japanese lacked the material, for this requires a cavalry which not only can shoot well, but which also can ride and fight well.

How clearly the Japanese perceived the truth of this is established by the fact that the Japanese government did send, during the war, a high official to Europe to study the remount system there and commenced, immediately after the war, to increase their cavalry by eight regiments. Therefore we should not allow the apparent negative lessons of the East Asiatic campaign to rob us of our faith in our arm nor to abridge the fundamental rule of our noble arm: "Only a cavalry which is self-confident will achieve great things."

ORGANIZATION OF THE CAVALRY IN ARMIES.*

BY LIEUTENANT GENERAL F. HERSHELMAN, RUSSIAN CAVALRY.

In the question of organization, one of the basic principles is that all modifications or improvisations should be avoided as tending to create disorder and to destroy the link between parts of the same unit.

All mixed companies, parties and detachments, formed from parts of regiments, brigades, etc., should be prohibited.

This is a universal truth which has been recognized by all great generals and military chiefs, but it seems that it is always necessary to call attention to it. During a war there are two phases of cavalry activity, viz., strategic activity and tactical activity.

The first comprises any independent action of cavalry detachments, operating at a considerable distance in front of an army, on its flanks, in rear of the enemy's troops or in rear of its own army for its protection. The second or tactical phase comprises the cavalry work on the battlefield, the service of protection near army corps (during marches and rests, scouting, protection of lines of communication, the service of providing connection between bodies of troops at a distance from each other), etc. The latter kind of service requires the constant presence of a certain amount of cavalry near an army, during fights as well as during marches and halts.

On the other hand the strategic activity of the cavalry sometimes makes it necessary to send far away large cavalry masses which must remain away for long periods of time and be cut off from any connection at all with the bulk of the army.

These tasks are often of great importance and require independent action.

We thus see that in order not to deprive the infantry, at the moment of a fight, of the assistance and protection of its cavalry,

*Translated from the "Voenny Sbornik," No. 4, 1908, in the office of the Military Attache at St. Petersburg for the Second Section, General Staff, U. S. A.

the latter must abstain from risky independent action. Still the strategic cavalry work has to be done and so for this purpose it is better to have cavalry which does not have any joint work with the infantry.

Therefore, in addition to cavalry regiments attached to and a part of army corps, it is necessary to have independent cavalry detachments, large enough to do independent work from the beginning of military operations. This can have a decisive influence on the march of events.

During the wars of the last century the importance of the strategic cavalry service was proved in many instances in a striking manner.

In our days the conditions are greatly modified principally by reason of the increased ranges of rifle and artillery fire. The importance of cavalry has not diminished but on the contrary it has gained in value not only on the battlefield but in the whole theater of military operations. Especially is this true of scouting work, the protection of its own troops, attacks on the flanks and rear of the enemy, etc. Regular actions during fights, as for instance frontal attacks in mass, are impossible now, but the battle or tactical activity of the cavalry has taken other forms which are of enormous importance in view of the increased size of modern battlefields and the areas occupied by the camps of modern armies.

The tactical activity of the cavalry has thus grown to be more independent in character and the organization of cavalry troops must correspond to this new condition.

It must be double, *i. e.*, the cavalry must be divided into army corps (divisional) troops and large independent units, the latter being under the immediate control of the commander-in-chief.

Facts have proved that the unsuccessful operations of cavalry in the Franco-Prussian, Russo-Turkish and the last Russo-Japanese wars were due in a large measure to this lack of organization.

Our cavalry, in time of peace, is distributed among army corps and is not destined for independent strategic action. At the outbreak of the war we had for service, it is true, especially formed cossack regiments of the second reserves (called only

when mobilization is ordered) but they were not fit for independent strategic action. They had been included in the organization of army corps and we had to form cavalry detachments from regiments in the theater of military operations. This hasty work was too late and when it was most needed we had no cavalry detachments fit for combined and coordinated action, able to be sent ahead at a moment's notice, and equipped and supplied for the work expected of them.

The inconvenience of not having independent cavalry detachments at our disposal, was bitterly felt during the Turkish war, both at the crossing of the Danube and later near Plevna. In spite of the heroic efforts of the mixed cavalry they could not accomplish half of the strategic task expected of them although they were highly qualified.

Napoleon, whose genius as an organizer remains unchallenged, had two types of cavalry. Two to four regiments were attached to and made a part of each army corps and in addition there were separate cavalry corps.

This organization enabled him to make great use of his cavalry in the theater of war as well as on the battlefield, giving as it did independent tactical units which could (and did) obtain great success and achieve brilliant deeds. He could send, at a moment's notice, large cavalry masses ahead of the army or when necessary could concentrate cavalry on some feeble point without depriving the army corps of their useful auxiliaries.

The American war also proved the value of such an organization of the cavalry, and we again find instances of successful operations, having great strategic importance, by large independent cavalry units. During the Franco-Prussian war the action of independent cavalry corps contributed greatly to the success of the Sedan maneuver.

All these examples prove how wrong the persons were, who about the middle of the last century preached other principles of organization for our cavalry. Their system caused the astonishing failures made by our cavalry in our two following wars.

The question of the tactical importance of cavalry in modern war has been debated so often that there is no need of repeating all the arguments in favor of these troops. The fact that the

importance of cavalry on the battlefield has not at all diminished but has been modified and grown to be more complicated is concurred in by all impartial and unprejudiced authorities. Only a false conception of the importance of cavalry on the battlefield could produce such things as happened during the operations before Plevna and in the battle of Mukden.

At Plevna, a cavalry mass posted in the rear (August 27th to 31st) remained inactive and made not the slightest attempt to support the infantry by a timely attack or even a demonstration to attract part of the enemy's troops away from the most important points, while in the battle of Mukden, a mass of cavalry concentrated on the right flank, instead of supporting the infantry action or making a diversion in the rear to impede the outflanking movement of the Japanese, was, through negligence or lack of perception, dispersed here and there in small detachments and when most needed left the battlefield and did nothing. The necessity for having a permanent organization of what might be called army cavalry, being reorganized, it is only necessary to determine the details.

My opinion is that cavalry corps should be formed because such an organization would give numerically strong units which do not vary in constitution and which would be very useful in the interests of the good training of all the cavalry.

Besides, this system would give to the more talented commanders a chance to distinguish themselves in peace time, from the common mass of officers and to appear in time of war as the leaders of the troops they have been commanding in time of peace.

The units need not be numerically strong; divisions would do. There must, however, be a good inspection organization, for instance, chiefs of military circuits with limited staffs.

Such a double organization would be a heavy burden for most armies but not for the Russian army, as it has at its disposal more cavalry than any of the others.

We can easily give to army corps the number of cavalry regiments they need and have besides big permanent independent detachments.

For instance, leaving out of consideration the Caucasia, Turkestan and Siberia, we have in European Russia 89 regiments of regular cavalry and cossacks.

The number of army corps in European Russia is 24. The guard and grenadier corps have three infantry divisions and the others two.

If we give each corps two cavalry regiments it will take 50 regiments leaving 39. These can very well be formed in cavalry divisions (9) or into corps (4).

The remaining three regiments would form in peace time a separate brigade and in war time be attached to the three first class fortresses nearest the frontier.

Upon mobilization the cossack regiments of the second reserves would increase the cavalry of the army corps.

It must be mentioned that, in proportion to our army, our cavalry is insufficient. Four cavalry corps do not correspond to the number of army corps which we can send to the theater of war so it would be desirable to see this force increased in number in order to conform to the requirements of modern strategy.

Cavalry corps should be organized and equipped so as to be best suited for independent action.

They should have horse artillery, rapid fire guns, mountain guns on pack saddles and should have for transportation only pack mules or horses. There should be no carts.

The pack transportation must be fully equipped and organized in time of peace so that there may be not even a day's delay in departure upon receiving the order for mobilization.

A certain amount of bridge material and a unit of mounted pioneers should be attached to these units as they might be very useful in independent action.

Blasting material, implements for railroad destruction and a field telegraph equipment must not be forgotten.

In conclusion I will mention that the opponents of this double system generally use the argument that this organization will create two very different types of cavalry by reason of the different training. This is no serious argument. Cavalry and cavalry work will remain the same, only the regiments will do the work differently in time of war according to their more or less depending upon infantry units. In time of peace, regimental, divisional, and combined army corps maneuvers will contribute to unity of action and ability to execute any kind of work.

THE EVOLUTION OF THE CAVALRY SADDLE.

BY MAJOR J. HORTON.

(From the *Cavalry Journal*—British.)

HISTORY tells us that at one time Commanding Officers of Cavalry regiments received a money allowance from the State wherewith to supply Saddlery; though there was doubtless some variety of pattern in the equipment thus provided, the system probably worked well enough in peace, but its unsuitability for war caused its general abandonment after the Crimean Campaign, except in the case of the Household Cavalry which continued to purchase its saddlery till 1880.

In 1856 the life of a saddle was fixed at fourteen years; at the present time a well-cared-for saddle will last for ten years.

That considerable attention has been paid to this most important part of a Cavalry soldier's equipment, is shown by the many changes of the standard patterns which have been introduced. In contemplating such changes, it is always well to remember that when a new pattern saddle is approved, the existing ones in use (as well as the reserve stocks) have to be retained until worn out, and that the general issue of the improved pattern must therefore be postponed for eight or ten years. For example, the 1890 saddle, the outcome of trials commenced in 1887, was not in general use till 1898, and the old pattern drivers' transport saddle purchased in 1858 could be seen in use until a few years ago.

Perfect agreement, even among experts, is seldom attained, and on the question of military saddles opinions are many and conflicting.

The essentials of a Cavalry saddle are that it must be capable of carrying heavy equipments in addition to the rider's weight, that it must be simple of construction, easily repairable, and capable of adjustment, and that it must retain its serviceability under the roughest conditions of active service, knocking about,

and exposure to bad weather, as well as the constant twists and strains inseparable from riding in the ranks in marching order.

Under such conditions a high class hunting saddle will not last twelve months, and there is no more conclusive testimony to the value of our military pattern than the invariable demands



1869.

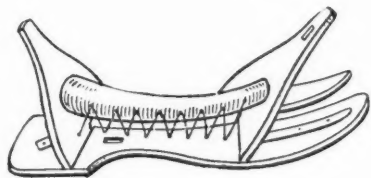
A set of Universal Saddlery with which each Regiment of Cavalry was equipped prior to embarkation for South Africa.

made for it by all classes of mounted troops in the later periods of the South African War.

The following descriptions will show the gradual evolution of our present Cavalry saddle, which as nearly as possible fulfills the essential conditions of the Service :—

(1) SADDLE, WOOD ARCH, PILCH SEAT.

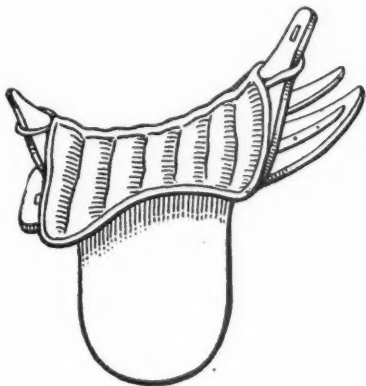
These saddles were in general use in the Cavalry prior to and during the Crimean War and the 11th Hussars retained them until 1866.



TREE.

The arches were of wood, high and sloping outwards, the side bars were narrow and of medium length.

The seat was a loose pilch one, padded and quilted. It was supported by a narrow underseat of raw hide attached to the arches and laced on each side to the bars by raw hide laces.



SADDLE.

The seat was short, not more than $16\frac{1}{2}$ inches, and with a very low dip in the centre.

The flaps are narrow and of medium length.

A blanket was worn with this saddle up to 1855.

The pannels which then replaced the blanket were thickly stuffed with horsehair and lined with white serge.

The girth was of stout hemp web, permanently fixed to the off-side bar by raw hide laces, and having two leather tabs (girth straps on a broad leather piece) permanently laced to the near-side bar. A breastplate and crupper were employed.

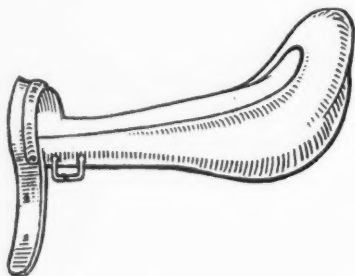
The stirrup leathers had single buckles which were worn near the stirrup, the spare end in a roll.

The stirrups were heavy and narrow in the thread.

(2) HEAVY CAVALRY SADDLE.

This pattern was used by some Heavy Cavalry Regiments before the Crimean War.

It was similar to that known as O. P. Transport Saddle and Royal Artillery O. P.



TREE.

The tree conformed to the hunting saddle tree, but was much heavier, having arches of wood, with gullet plates, bar plates, and cantle plates, and being without any extension of the side bars in front or rear of the arches. Iron stirrup staples were fitted to the tree.

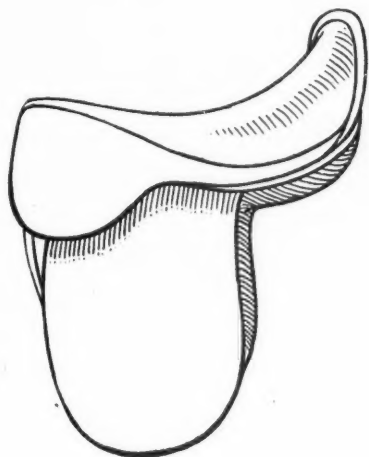
The seat was of hide (cow hide split) formed on stretched web and serge, and padded with flock, as in the hunting saddle. The length of seat varied, some being very short.

The Household Cavalry saddle up till 1894 was of this class, but with extended side bars (fans) in rear of cantle.

The flaps were broad and short.

The pannels were formed like those on the hunting saddle, but heavily stuffed with flock.

A blanket was worn in the Crimea under these pannels.



SADDLE.

The girth was the same as the one described for the pilch seat saddle (see above) and similarly attached, and the stirrup leathers and stirrups were also similar.

Breastplates and cruppers were worn.

(3) UNIVERSAL WOOD ARCH SADDLE.

(Nolan Pattern)

This pattern was introduced in 1854, and made in three sizes. It was in use in British Cavalry regiments in India as late as the year 1885.

The arches were of wood, the front arch being upright, while the hind arch sloped to the rear, and had a high cantle.

The front arch was strengthened with an iron gullet plate and three crown plates, the hind arch with an iron plate and two fan plates. The fan plates were omitted in later manufacture.

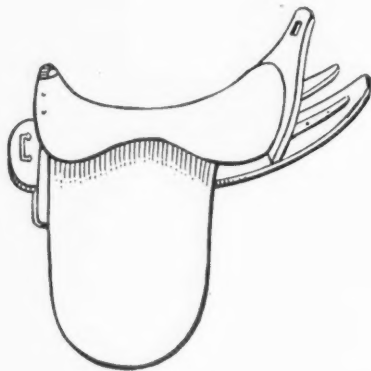
The side bars were 24 inches in length, having slots in them for stirrup leathers, and smaller holes for securing the girth and girth tabs by lacing.

The seat was of solid leather, blocked and riveted to the arches, and about $16\frac{3}{4}$ inches in length.

The length of seat afforded to the rider was considerably reduced by the shabraque and sheepskin, each having a thick leather seat worn over the saddle, these when strapped down between the arches by the surcingle gave but 16 inches of length.

The flaps were short, and medium width, and set straight.

The pannels were heavily stuffed with horsehair and lined with white serge, the facings (rounded parts on the edges) were very thick, and the weight of a pair of pannels averaged from 5 lb. to 6 lb.



SADDLE.

Numnahs were introduced when the blanket was taken away, and were worn with the pannels.

The girth was of stout web as described in the pilch-seated saddle and similarly attached.

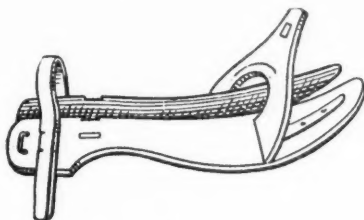
The latest manufactured trees were fitted with iron staples for carrying two girth straps on each side, and a solid leather girth having buckles at each end was brought into use.

The stirrup leathers and stirrup were as described with the pilch-seated saddle.

Cruppers and breastplates were worn, the latter attached to a ring on the crown of the arch.

The carbine bucket was a small 10-inch leather tube, with an iron bound mouth. It was suspended from the front arch off side, so as to hang a little below and in front of the wallet. A strap attached to a ring on the crown of the arch was used to buckle round the small of the butt of the carbine to hold it securely.

In 1868 the long carbine bucket, worn as now, was issued generally; it had a broad leather flap to attach to the surcingle, and a leather rounded strap to fasten the carbine in the bucket.



TREE.

In 1869 the shabraques were withdrawn.

The defects found in this saddle were as follows:—

The attachment of girth was too far back. The pannels were too thick. The hind arch was too high.

The joints of the arches opened owing to the constant washing of the wood (to get it white) and by the strain of the load. The gullet plate required frequent renewal.

The front arch stood a strain of 4 cwt., but being elastic it yielded slightly under this weight.

(4) UNIVERSAL FLAT IRON ARCH SADDLE.

This pattern was introduced in 1870, and made in three sizes.

The tree stood but $2\frac{1}{2}$ cwt. on the arch.

The arches were of flat iron, the cantle was low, being without a spoon; the side bars were similar to the previous pattern, but rather thinner.

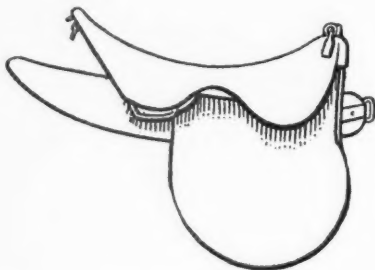
Stirrup slots and girth bars were as with the wood arch tree.

The seat was of solid leather, attached to the arches by straps and buckles. The flaps were short.

The pannels had heavy welts, and facings like a thick cord round the edges and under the flaps, and were thickly stuffed with horsehair. The flaps of the pannels were shorter than on previous saddles.

The girths were of solid leather, as mentioned in the previous pattern.

Breastplate and crupper were worn. Stirrup leathers as before, but the stirrups were less bow-shaped.



FLAT IRON ARCH.

Tree same as (5) but flat iron arches.

This saddle was weak and unserviceable, the arches opened and let the seat down, the bars were too thin to carry the iron arches and often split.

The girth straps were set too far back on the saddle, they depressed the hind part, the weight of the rider not being properly distributed over the bearing parts of the pannels caused the saddle to ride forward, and girth-galls resulted.

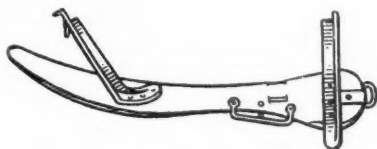
The low cantle and the absence of a spoon made it practically impossible to keep the centre of the rear pack up off the horse's back.

(5) UNIVERSAL ANGLE IRON ARCH SADDLE.

This saddle was introduced about 1876, and made in three sizes, later in four. This saddle differed from the flat iron pattern in having stronger arches of angle iron.

The authorities had recommended that the arches should be low, and they were so made, but they proved faulty. Those of later manufacture were ordered to be made with the hind arch higher than formerly, but it still gave a low cantle.

The girth straps were placed much more forward, directly under the stirrup slots. This corrected the tendency of the girth in its old position to cause the saddle to ride forward.



ANGLE IRON ARCH TREE.

Saddle as (4).

The girth, breastplate, &c., were as in the previous pattern. After the introduction of pattern 1890 saddle (see p. 342) an 8 oz. steel plate was fitted to the front arch, which strengthened the bearing power of the saddle. Originally it stood a steady strain on the front arch of 3 cwt. but after the plate was added, 4 cwt.

The low cantle did not allow the centre portion of rear pack or valise to be strapped up sufficiently off the animal's back. It allowed idle and short stirrup riders to sit with the greater weight on the hind arch, depressing the rear part.

(6) UNIVERSAL PATTERN 1890 SADDLE.

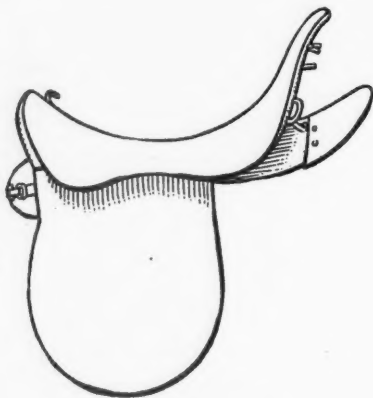
Made in four sizes, and to stand a pressure of 6 cwt. on the front arch. They are now in general use.

The arches were of wrought steel, the front being of channelled form, the hind bevelled with a spoon to give a high cantle. The high cantle was intended to give a more secure seat, to

allow the rider to mount readily, and to admit the rear pack being strapped well up in the centre.

Stirrup links were fitted to the side bars in lieu of slots. This was necessary, as with the slot arrangement stirrup buckles were often pulled over the top edges of the wood bars, causing sore backs, particularly when thin pannels were employed.

About two years subsequent to the introduction of the saddle, the V. Attachment was authorized to replace the links for attaching the girth straps. The first pattern was fitted with dees, the latter, which is still in use, with brass plates.



SADDLE

Numnah pannels are approved with this saddle, and a Numnah of new shape was introduced similar to present pattern.

Hair pannels were replaced by a blanket $4\frac{1}{2}$ lb. in weight, when first introduced, and afterwards increased to 5 lb.

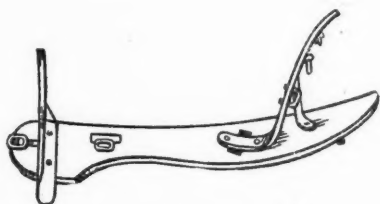
Breastplates similar to the hunting pattern (i. e., attached to the front of the side bars and not to a ring on the front arch) came into use and cruppers were discontinued.

The old pattern breastplate attached to the crown of the arch, worked continuously on the pommel ring with every movement of the horse's shoulder, and as the saddles were often cocked up with the thick pannels an objectional see-saw drag on the saddle was caused.

The *Seat* was formed of two layers of thin leather, having a thin piece of felt between, and supported by a web underseat. A solid seat was brought in as Mark II. in 1892. A slightly wider arch with an increase of $\frac{1}{4}$ inch in height as Mark III. in 1898.

The *Girth* was a wider leather one than formerly and split 6 inches on each side of the centre to give elasticity behind the elbows, leaving a 6-inch solid centre.

The *Sheepskin* was divided into front and hind, and the hind part could be shaped into a Valise. They eventually became obsolete.



TREE.

The *Carbine Bucket* in 1890 was a small one like an elongated pistol holster. A narrow arm stiffened with whalebone had replaced the broad leather one. The suspending straps were placed on the sides to allow the bucket to be worn on either side of the horse.

Many of the changes of pattern brought in at this time were recommended after trials extending over some years by the Saddle Committee of 1884, of which General Sir Frederick Fitzwygram, I.G.C., was President, General Sir Charles Fraser and other experienced Cavalry officers were members.

(7) UNIVERSAL STEEL ARCH 1902 SADDLE.

This is made in three sizes, large, medium, and small.

It is a lighter saddle than the previous pattern. The arches are of wrought steel, the front of bevelled steel, but with points cut off flush with side bars, the hind arch of angle steel with spoon cantle riveted on and lower than before.

The side bars are thinner and shorter than those in the 1890 saddle; they are intended to be worn covered with felt pannels.

The front ends of the bars (Burrs) are shorter than those in previous saddles.

Flaps.—These are set more forward than was the rule for the preceding saddles.



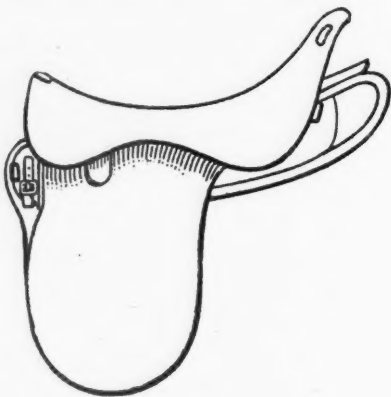
TREE.

Breastplates.—A percentage only used.

Wallets and Numnahs.—Obsolete.

Numnah Patches.—To be worn on each saddle with a saddle blanket.

The points of the front arch on previous saddles were de-



SADDLE.

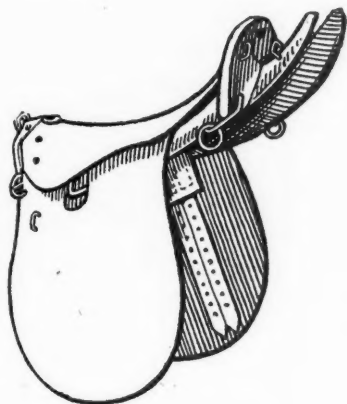
signed to give the front a fork grip, but they were an evil, preventing saddles otherwise suitable being used on larger horses than the grip of the points indicated; their removal allows the saddle a wider range of fitting and the front arch a less chance of opening by their leverage.

(8) HOUSEHOLD CAVALRY SADDLE.

The saddle issued to regiments of Household Cavalry (after the system of providing them regimentally ceased in 1880) was determined by the three Commanding Officers.

The tree was of the same type as that used in the hunting saddle and O.P. Transport mentioned above.

The tree was of beechwood strengthened with iron plates, the bars being covered with glued linen cloth, and in part with hogskin; the side bars extended behind the cantle; the latter was brass bound; the seat was of solid leather riveted to the arches and $18\frac{1}{2}$ inches in length; the girth straps were sewn to webbing attached to the tree.



The pannels were similar to the line Cavalry pattern, but stuffed with white flock and fitted with sweat flaps.

The seat, which was 1 inch longer than the old regimental patterns, caused much dissatisfaction; shorter seated saddles as in use before 1880 were considered advisable to prevent chafed backs and galls, and in 1895 this saddle became obsolete, and the line Cavalry saddle (1890 pattern) was substituted.

Individual opinions of experienced officers have varied widely on many points of detail, such as blankets, wallets, &c. When first approved in 1890 some authorities considered a 4-lb. blanket suitable, while others preferred one of 7-lb. weight.

Eventually a 5-lb. blanket became the standard.

In 1901 the same wide difference of opinion prevailed; some advocated a very light blanket, others a very heavy one. On active service two blankets will now be carried, one for the horse and one for the man.

Wallets are now obsolete, though many authorities advocate their reintroduction, to free the rider of some of his present awkward load. Prior to 1884 they were so made that when filled, they bulged forward and backward, taking up seat room. The later pattern was formed with double gussets, which extended outwards to take up less space on the saddle and to give a bed for the rider's thigh or knee. Single loops at the back were placed so as to give an oblique set to the wallets to suit the angle of the rider's thighs. When partly filled with straw they formed good knee pads, and were frequently used in the early stages of breaking restive horses.

Unfilled, they gave the young rider a sense of security in the saddle, and acted as a crutch to timid horsemen.

Pannels stuffed with hair or flock have not proved so serviceable as felt (*Numnah*) pannels.

Felt pannels give advantages lacking in saddles used with bare side bars. They admit of layers of felt being added to build up the bearings; they get a certain grip of the blanket and provide knee rolls; they also give protection to the wood bars when off the horse.

Finality is hard to reach, especially in patterns of military equipment.

Doubtless Committees on Saddlery will sit again and improvements in materials will result in further decrease of weight, but it is hoped that the details above set forth will be of value to would-be reformers, and save them from going over ground which has been traversed before by generals and other officers of no less experience than themselves.

WIRELESS TELEGRAPHY.

(From the *Royal Engineers' Journal*.)

Translated from a Lecture by Major Ferrié, of the French Military Telegraph Department, in the *Annales des Ponts et Chaussées*, by A. H. Scott.

WIRELESS telegraphy furnishes an almost unique example of a scientific discovery arrived at solely by previous theoretical reasoning.

Maxwell having mathematically proved that the properties of light could be compared to those of an electro-magnetic vibratory motion, Hertz sought to verify this statement experimentally, and succeeded in creating electrically a vibratory motion possessing all the properties of light.

Wireless telegraphy—optical telegraphy's first cousin—had been discovered; it was only some years later, however, thanks to other scientists, Telsa, Lodge, Popoff, Branly, and last, but not least, Marconi, that this invention was practically made use of.

Before therefore describing wireless telegraphy at its present stage, it may be well to call to mind the properties of Hertzian waves.

A.—HERTZ'S EXPERIMENTS.

If a condenser be connected to the terminals of a source of high-tension electricity, and also to two small metallic spheres, it is found that, if the spheres be brought within a certain distance of one another, the gap between them is bridged by a spark, due to the discharge of the condenser. This discharge is not a sudden neutralization of the electricities of opposite sign on the spheres, but a series of oscillations of the electricity in the discharge circuit, *i. e.*, an alternating current is produced in this circuit, which dies out more or less rapidly according to the resistance of the circuit and of the spark. The frequency of this current is very great and varies with the capacity of the condenser, and with the size and shape of the wires connecting it to the spark gap. Frequencies greater than 1,000 million alterna-

tions per second have been produced, *i. e.*, vibratory motions having a wave length of less than 1 centimetre, but they cannot compare with the vibrations of light, the wave length of which is about 1/2000 millimètres.

These electrical vibrations are transmitted through the atmosphere by means of waves, known as Hertzian waves, which can be reflected, refracted, or polarized just like light waves. They have the property of being able to generate in any metallic circuits they meet alternating currents similar to those produced in the original circuit. This phenomenon can be experimentally illustrated as follows:—Electrical oscillations or alternating currents of high frequency are generated in a circuit consisting of a source of electricity, a condenser, a spark gap, and a few turns of wire wound round a core. A second circuit consisting of a condenser of adjustable capacity, a few turns of wire, and a detector is fitted up (*Fig. 1*).

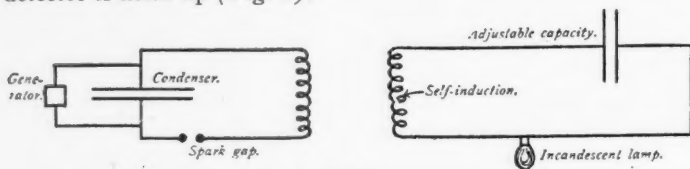


FIG. 1.

Now were this second circuit connected to the source of supply, the frequency of the alternating current generated in it would depend on the capacity of the condenser and the number of turns of wire (*i. e.*, the inductance); so that we see that the two circuits, as fitted up, can be "syntonized," or got in tune, by varying either of these factors. If the two circuits be placed close enough together, an ordinary incandescent lamp can be used as a detector; it will then be noticed that the lamp becomes very brilliant for the value of the factors, which is such that

$$\begin{aligned} &\text{Inductance of No. 1 Circuit} \times \text{capacity of No. 1 Circuit} \\ &= \text{Inductance of No. 2 Circuit} \times \text{capacity of No. 2 Circuit,} \\ &\textit{i. e.}, \text{ when the circuits are syntonized.} \end{aligned}$$

The time of duration, T , of an electric oscillation in a circuit of capacity, C , and self-induction, L , is given by the formula

$$T = 2\pi\sqrt{C \cdot L}.$$

The wave length of the vibratory motion produced, *i. e.*, the distance travelled by the vibration whilst the oscillation lasts is given by

$$\lambda = V \cdot T,$$

where V = the velocity of light.

The experiment just described explains the theory of wave meters, that is to say instruments for measuring the wave length of the electric oscillations due to the discharge of a condenser. A wave meter generally consists of a circuit containing an adjustable capacity, an adjustable inductance, and a detector (generally a thermal ammeter). Each apparatus has a reader giving the wave lengths corresponding to various values of the capacity and inductance, from which the desired result is obtained.

Yet another characteristic of alternating currents of high frequency is their power of propagating themselves in open circuits. Thus, if the second circuit of the above experiment be replaced by a straight stretched wire, the centre of which is only a short distance away from the generator circuit, the following phenomena may be observed:—

- (1). The vibratory action induced in the wire travels to its extremities and is then reflected.
- (2). The incident and reflected vibrations interfere with one another, and if the length of the wire has been properly chosen, it is possible to observe by means of suitable detectors, the production of electrical waves and depressions similar to the vibrations in a stretched string.

Now the distance between the summits of two consecutive waves or the bottoms of two consecutive depressions, is equal to the wave length of the vibration, so that, provided it is not too long, we have a second method at our disposal of measuring wave lengths.

As soon as Hertz's experiments were known, several scientists declared that if sufficiently powerful waves could be produced, they could be used for the transmission of telegraphic signals. Marconi, when aged 19, was, however, the first man who made any real attempt to put the Hertzian waves to prac-

tical use, and his success is due to the use of a vertical conductor, termed aerial, which increased the distance the waves could travel.

No attempt is here made to describe in detail Marconi's experiments, or the means by which he brought wireless telegraphy to its present state of perfection; it is only intended to give a rough outline of the various forms of telegraph now in use.

B.—WIRELESS TELEGRAPHY.

The problem of wireless telegraphy can be divided into two quite distinct parts—(a) the transmission and (b) the receiving of signals.

Transmission is accomplished by producing at a point long and short series of Hertzian waves, combined so as to reproduce the letters of the Morse code. To ensure that the waves will travel some distance, they are generated in a vertical conductor or aerial—either directly or by induction—from a special circuit.

Direct generation of the waves in the aerial was used from the beginning by Marconi; now, however, it is almost entirely in disuse. In this system the aerial formed one plate of a condenser, whose other plate was the earth. The secondary of an induction was connected to this condenser, a battery and key in the primary circuit being the means of signalling. Two metallic spheres at the terminals of the secondary circuit formed the spark gap (Fig. 2).

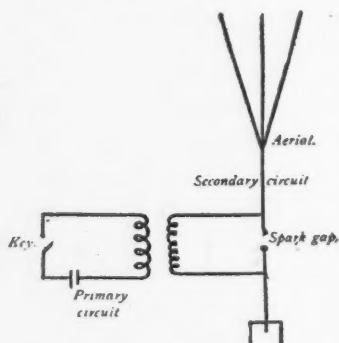


FIG. 2.

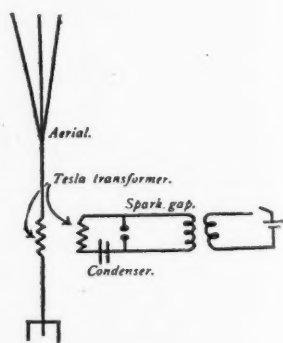


FIG. 3.

In the second method the spark gap is in a special circuit, and the Hertzian waves are transmitted to the aerial by means of a Tesla transformer (*Fig. 3*). The condenser in the special circuit can be charged either by an induction coil, or by means of the secondary circuit of an alternating current transformer, to be varied. A key in the primary circuit is used for "sending."

Experiment shows that the "range" of the waves increases with the height of the aerial, or, in the case of an aerial consisting of several wires joined at their base, with the area covered.

The waves travel along the surface of the ground, but how, is as yet not well understood. They go round obstacles like sound waves, or rather by a phenomenon similar to the diffraction of light. When they meet an aerial similar to that by which they were produced, they create in it electrical oscillations similar to those which existed in the transmitting aerial. These oscillations are very feeble; they become most intense when the two circuits have the same period of vibration, *i. e.*, when they are syntonized.

The presence of these weak oscillations is detected by making them act on a wave detector either directly or by means of a specially calculated little transformer.

The commonest types of detectors are the Branly coherer, the Ferrié electrolytic detector, and the Marconi magnetic detector. The last two are the most commonly used forms, and are about equally good as regards sensitiveness and ease of use.

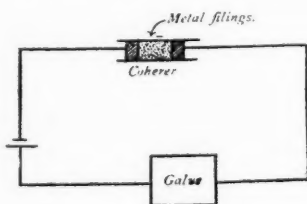


FIG. 4.

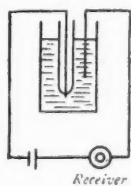


FIG. 5.

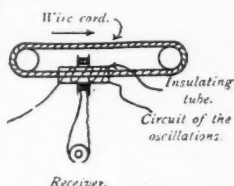


FIG. 6.

The Branly coherer (*Fig. 4*) consists of a glass tube containing metallic filings, between a pair of metallic electrodes. If this coherer be connected in series with a battery and galvanometer, it will be seen that no current flows through the circuit.

When, however, Hertzian waves are produced near the coherer, it becomes a conductor, and remains so after the waves have ceased, but the very slightest tap is sufficient to "de-cohere" it again. It will thus be seen that this apparatus, if provided with a suitable tapper to "de-cohere" it, can be used to receive the dots and dashes from the transmitting station and pass them on to the ordinary telegraph apparatus for the reception of messages.

The electrolytic detector consists of a platinum wire soldered into a glass tube, so that only about 1/100 millimètres of the wire project beyond the glass into a jar of acidulated water. The wire is connected in series with a battery telephone receiver with a return to the water (*Fig. 5*). As soon as the current flows, the short wire gets polarized and the current stops. Hertzian waves depolarize the point, the current flows, and a noise is heard in the receiver; when the waves cease, the reverse process takes place. Telegraphic signals can thus be read "by ear" in the receiver. The Marconi magnetic detector is based on the effect of the Hertzian waves on the magnetization of a cord of thin wire. This cord passes through an insulating tube wound with wires carrying the waves. A coil connected to a telephone receiver is placed round the tube (*Fig. 6*). When the cord is moved in the proximity of a magnet placed near the coil, noises are heard in the receiver. They are due to the currents induced by the changes in magnetization of the cord, under the influence of the electric oscillations.

Other detectors are Fleming's valve and the carborundum detector. The latter is especially useful for transmitting continuous waves. The process described above only produces very much damped vibrations, which begin afresh with each spark, and the reception of signals is not always as clear as might be desired; thus for short distances untuned receiving stations often receive messages not meant for them, even from stations emitting waves of a different wave length to their own. This constitutes one of the disadvantages of wireless telegraphy.

Attempts have been made to obtain good results at receiving stations by means of undamped vibrations, on the following principles: When a condenser is connected to the terminals of a

continuous current arc lamp (*Fig. 7*), it is found that an alternating current, whose frequency depends on the capacity of the condenser, exists in the condenser circuit, and by giving the capacity the proper values, Hertzian waves of the right strength for signalling can be produced. The best results are obtained when the arc is enclosed in an atmosphere of hydrogen or lighting gas, and when placed in an intense magnetic field.

Attempts have also been made to construct alternators generating high-frequency oscillations direct, but hitherto apparently without any very great success.

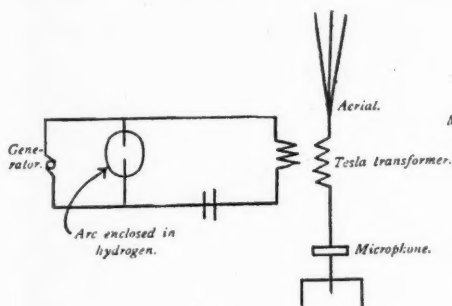


FIG. 7.

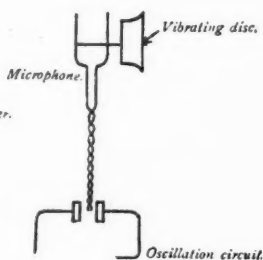


FIG. 8.

C.—WIRELESS TELEPHONY.

The use of continuous waves and of the "singing arc" have also been employed for the purposes of wireless telephony. The apparatus used is as follows:—The aerial is excited by means of damped waves, an arc lamp replacing the spark gap. The microphone is either in series with the aerial or in shunt with the Tesla transformer in the aerial. The best form appears to be a water microphone. This consists of a vibrating disc, which is fixed to a glass funnel terminating in a sharp point (*Fig. 8*). Acidulated water falls from the funnel; when speaking, the vibrations of the voice induce vibration in the liquid, and the conductivity between the two contacts varies. As these are in the oscillating circuit, variations in intensity can be noticed and the human voice reproduced.

D.—DIRECTIONAL WIRELESS TELEGRAPHY.*

The first attempts made to direct the waves by means of large mirrors, in the foci of which the aerials were placed, met with little or no success.

The use of horizontal aerials, giving a maximum intensity in the opposite direction to that towards which the aerial points, was next tried, but was only useful for short-distance signalling.

Now experiments are being made with a view to utilizing the phenomena of interference by the use of two or more aerials. The results are as yet incomplete, and only allow of a maximum effort being made in one direction and a minimum in the others, and not as in wire telegraphy, of all the effort being made in one direction—along the wire.

E.—APPLICATIONS OF WIRELESS TELEGRAPHY.

The Navy has most profited by the invention and development of wireless telegraphy. Stations all along the coast communicate daily with the steamers, some of which even edit a daily newspaper with the latest political and commercial news.

The Marconi Wireless Telegraph Company has attempted to compete with the Trans-Atlantic Cable Company, but the service is somewhat irregular on account of atmospheric variations.

It is interesting to note that the military station on the Eiffel Tower at Paris receives all the telegrams exchanged between Canada and Ireland, although 5,000 kilometres distant from the former country.

In the Colonies and for communicating with lighthouses and lighthouse boats, wireless telegraphy is invaluable, and in any future war it will certainly play a large rôle, as has been shown by the French operations in Morocco.

In a word, everywhere where ordinary telegraphy cannot be used, or where it is too expensive, wireless comes to the rescue. It must, however, be remembered that it has come not to replace but to help its predecessor where hitherto it has been powerless.

*Experiments in directive field wireless telegraphy have been made at the Army Signal School, at Fort Leavenworth, which, while not entirely successful, indicate that it is possible to concentrate or direct the maximum energy in certain directions within very small limits as to divergence. It can be readily seen how important this question is in making field wireless telegraphy practicable in service.

CANADA AS A COUNTRY FOR BREEDING
REMOUNTS.

BY LIEUTENANT COLONEL V. A. S. WILLIAMS, A. D. C., R. C. D.,
INSPECTOR OF CAVALRY.

(From the *British Cavalry Journal*.)

The Canadian National Bureau of Breeding was organized in the spring of 1908, being incorporated under Dominion of Canada Charter in the autumn of the same year with offices in Montreal.

The object of the society is the improvement of the breed of horses in Canada, by placing thoroughbred stallions of class and pedigree within easy reach of farmers with good cold-blooded mares; from the very first its operations have been attended with unqualified success, and it has been the means of revealing a state of affairs which few thought existed in Canada, viz.—that the country from coast to coast has been hungering for the thoroughbred, and that Canadian farmers have been only waiting for a chance to improve the breed of their horses.

The Canadian Bureau is not a commercial concern: it holds the view that the reason farmers have not benefited by the use of thoroughbred blood is because such blood has not been easily available, the fees for thoroughbred stallions being very high and the initial cost of purchasing such horses being beyond the reach of the average farmer; and it is therefore undertaking to secure the stallions and to deliver them free of all cost to responsible men, who in turn will give their neighbors the service at a nominal fee, which will go to pay for the maintenance of the stallions.

The conditions are most simple and have been approved by thousands of farmers who have written to the Bureau commending it for its liberality and fairness.

One of the strictest rules of the Bureau is that the horse shall be well cared for, and the right is reserved to take back any horse which, in the opinion of the Bureau Inspector, is not properly treated. Successful applicants have hitherto taken the

greatest care of the horses entrusted to them, and exhibit a keen delight in keeping them in the very best possible condition.

It is not only in the case of stallions that the Bureau's influence is felt, for the brood mares, too, are getting far better treatment than formerly, being looked after on the lines laid down by the Bureau.

Every man who has charge of a Bureau horse is supplied with a service book in which is registered the name of the owner of every mare covered, so that the Bureau can keep in touch with them, can send instructions and advice regarding the care of both mares and foals, and can further direct the War Office buyers and others to the farms where good half-breed horses can be bought. To provide such information is one of the most important features of the work, for it is now admitted on both sides of the Atlantic that the new organization, if successful, will go far towards solving the remount problem in England by creating a type of horse suitable for the Imperial Cavalry.

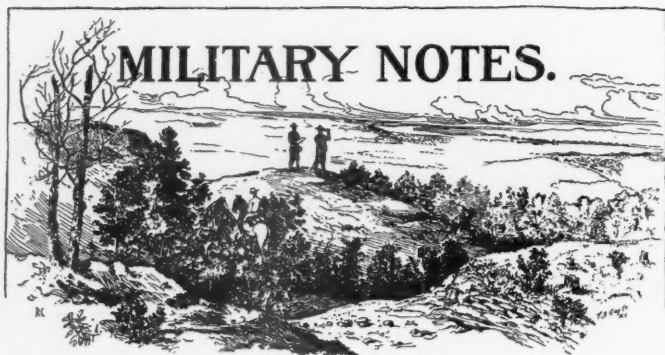
All governments acknowledge that the only way to get cavalry horses is by means of the thoroughbred cross, yet such is the state of the breeding industry in Canada, that even the mounted branches of the permanent forces in Canada and Royal Northwest Mounted Police have great difficulty in getting the saddle horses necessary to keep their forces up to the standard. When it is considered that the Province of Alberta is twice the size of Great Britain and Ireland, and that the Province of Saskatchewan is larger than France and Germany, the scarcity of saddle and cavalry horses is all the more surprising; yet the hundreds of appeals to the Canadian Bureau from the Canadian Northwest show the cause of this lamentable state of affairs to be simply that the farmers and small breeders have no thoroughbred stallions and are forced to breed to anything that is available.

Let the demand for blood stallions be supplied, and when the next national emergency comes, the millions spent for cavalry horses will remain within the Empire instead of going to enrich other nations, as was the case in the late South African war. Kipling's motto, "Keep the money in the family," is not a bad one to follow, especially in times of national stress.

It is understood that the Bureau will place one hundred

stallions before the end of 1909, and if possible put out an equal number every year for the following four years: if this plan is carried out, Canada will have the greatest breeding bureau in the world and in round figures about £1,000,000 per annum will go into the pockets of Canadian farmers.

In conclusion I must add that though the Canadian National Bureau is not controlled by or affiliated with any jockey club or racing association, it aims at being on friendly terms with all such organizations, realizing as it does that the race course is the training ground of the thoroughbred and that racing is the supreme and only trustworthy test of the pure-blooded horse.



THE FARRIER.

Of the many improvements which have taken place in the several departments of the army, not one has received so little encouragement and recognition as the Training School for Farriers and Horseshoers, at Fort Riley, Kansas.

I believe this may be accounted for, not through lack of appreciation for the work being done there but through our newly acquired habit of taking things as matters of course, and a forgetfulness of the conditions that obtained in the service previous to the establishment of this school.

The troop and battery commanders of 1898 are now majors, at least, who, as a matter of course, are out of touch with the minor details of troop or battery routine. Their places have been taken by young men who, naturally enough, look wholly to the future, who know little of the army routine of the past and who consequently have no basis for comparison.

Previous to the establishment of the Fort Riley school, the veterinarian, if conscientious, instructed the farriers of his regiment. Why some of these men were appointed as farriers at all will always remain a puzzle to me unless it was because they could neither read nor write but had a troop reputation as a

"Joe Dandy" on "lampers," bots, worms, fits and glanders. I know many of them were appointed because they were good post-hole diggers, "strikers" or "coffee coolers."

I remember, in my unsophisticated days, of once asking an old troop commander of my regiment to either relieve the farrier, who was a dunce, from caring and exercising four private trotting horses so he could give more attention to the troop cases, or appoint an intelligent man in his place. The troop commander, the salt of the earth too, looked at me in unfeigned astonishment and remarked: "Do you know what you are doing? You are interfering with a custom of the service that has obtained from time immemorial." The customs of the service being holy things in those days I refrained from committing a sacrilege.

It was a difficult problem to instruct the farriers in veterinary lore, except through the eye, for be it remembered they took little interest in "book learning" and none at all in lectures except in those relating to alcohol and its effects. Any alcohol that found its way to their particular organization was considered as food with which to eke out their ration.

Some of them drank their alcohol unadulterated, while those of an artistic temperament absorbed it in the form of a milk punch, egg nog, or "picket line" cocktail.

Through the efforts of General Carter the school at Fort Riley was established, and it has done excellent work along the lines laid down for it. Personally, I was doubtful for a number of years as to its success, knowing from long experience what the instructors had to contend with in trying to develop the small quantities of grey matter distributed among the students.

I was also aware of the poor interest organization commanders were taking in the school and its work, and the little thought they gave to the selection of the men sent there to represent the organization and the regiment.

Due mostly to lack of interest by those who would be most benefited, the school has had a very difficult and thankless task to perform; moreover, it was handicapped by the unfavorable prejudices of nearly everybody, mostly because it was an innovation.

I believe that all this prejudice has entirely disappeared, but I still believe that commanding officers do not show sufficient

interest in this matter, and I know that they can furnish better men for instruction.

The troop commanders' point of view is about as follows: "They want me to send another man to Riley. I have a good farrier now. He will never make a non-com., so he will remain as farrier indefinitely. I could send Brown. He's an intelligent man and a horseman too, but I need him for a corporal when Sergeant Murphy retires. I'll send them Blank before I have to put him before a général. He's a 'boozoid' and isn't good for anything. They'll put the 'gaffs' to him down there." He sends Blank who is as useless at the school as he had been in the troop. If he had sent Brown he would have had a good farrier as well as a good non-commissioned officer, both excellent things in any mounted organization or detachment.

The battery commander looks at it this way: "A man to the Riley school. That's going to bust up a section. What do I want with a farrier anyway? They are not authorized for field artillery. I have the best stable sergeant in the service who will serve in the battery until he retires. They're interfering too much with the battery. No independence at all any more. Making farriers for us that we're not allowed, and making us do main guard too. What is the service coming to, I'd like to know? I'll send them Jones. He's generally cook's police when he's not on picket line punishment. It's true he doesn't savey much about a horse but the trip would do him good, and me too. I suppose I could send Corporal Johnson or Sergeant Moore, but that would make me short a gunner, or a chief of section. It's up to Jones so I'll let it go at that."

Jones of course it as useless as Blank of the cavalry, and as the faculty at Riley is not permitted to trephine the heads of students these two men return to the organizations with each cranial hiatus as full of nothing as when they departed.

Occasionally a wise and far-seeing officer sends a bright man to the farriers' school and on his return, if he gets into the stable as a farrier before he is appointed a corporal, we learn of the hard work, the grind and the struggle of the Riley instructors. Their fears, hopes and small triumphs.

The men who graduate from the school are, as a rule, a credit to it. They are keen to increase their knowledge and

are willing to continue to study and learn. It has been my pleasure to assist some of them through one of the best veterinary colleges in the United States, and they are now in good paying private practice.

The Fort Riley training school for farriers and horseshoers is deserving of more generous treatment at the hands of the mounted organizations. It should, at least, have intelligent men sent there for instruction, preferably men who are intended for non-commissioned officers. I have often thought that all applicants for admission to the school should be required to pass a fair mental examination, and that they should also be temperate in their habits, before the United States is put to the expense of their transportation.

It is believed that the signal corps, engineers, infantry machine gun platoons and mounted infantry, when organized, should have their complement of farriers. I am of the opinion that each wagon train of the quartermaster's department should have a man detailed as farrier, that this man should have better pay than that of a teamster and that he should be instructed at the Fort Riley school.

We owe the farriers and horseshoers' school at Fort Riley our loyalty, encouragement and support. It has accomplished, against odds, a great good to the service, a good that is not yet properly appreciated. We owe it to the instructors to send them material on which they may do effective work that will bear healthy and useful fruit.

The school owes it to us to be still more practical in its instruction and to go more into the details of forage allowances, feeding, salting, watering and exercising. Grain capacity of the usual army utensils used in camp such as tin cup, G I bucket and nose bag. Bridling, saddling, cinching, halter and rope tying, capacity of a double handful of oats, or bran and things of that character which are invaluable in the field.

It is to be sincerely hoped that soon, the fact that a man has graduated from the Fort Riley training school for farriers and horseshoers will be a strong recommendation, in his favor, for promotion.

GERALD E. GRIFFIN,
Veterinarian Third Field Artillery.

OVERWORKED ARMY HORSES.

(From the *Broad Arrow*.)

Our contemporary, *The Daily Mail*, quoted this week under a heading, "Overworked Army Horses," the last four lines of our comment in our issue of the 10th inst., where we animadverted on the constant use of the horses of the Regular Army by Territorial mounted units. The lines quoted were: "In these days the Regular 'hairey' cannot look forward to a week-end rest, as formerly was the case. Two pounds of extra oats is his sole reward for being bucketed and spurred in the Long Valley and elsewhere on a Saturday afternoon." Now anyone reading the above quotation would naturally suppose that it was the Regulars who were the culprits in overworking their horses, whereas we pointed out in the first part of our comment the scandalous manner in which, under the orders of Mr. Haldane and the Army Council, the horses of the Regulars were being used by the Territorials, especially on Saturday afternoons. From time immemorial it has been the custom in the Regular Army not to have mounted parades on Saturday except for a few squads at riding drill. Saturday is usually the day set aside for a thorough cleaning up of equipment, harness, saddlery, etc., after five days' drill during the week, and the horses have had a well-earned rest in consequence. Under the bad new times the horses, especially at our large military centers, are placed at the disposal of the Territorial Army, although Sir John French, the Inspector-General of the forces, distinctly stated in his recent report that such a procedure was unsound, for if, as he remarked, the Regular units lent their horses in the way that now obtained, it was a proof that the Regular units "do not use their horses sufficiently so as to render these units as efficient for war as they should be." But what does Mr. Haldane care for the opinion of the Inspector-General of the forces when, in the House of Commons on the 12th inst., he stated that by lending the horses of the Regular Army to the Territorials great "mutual advantage" to both was gained thereby? We now ask, what is the use

of having an Inspector-General if his official opinion on efficiency is set aside by a civilian whose sole idea is to borrow from the Regular Army so long as the result is a saving of money for the Socialistic schemes of his colleagues in the Cabinet?

JAPANESE CHILD SOLDIERS.

(From *The Seventh Regiment Gazette*.)

Gen. Kuropatkin writes entertainingly in McClure's of Japan's methods of preparing for war. He says:

"In their military school, where I saw a Spartan system of education, the exercises of the cadets with pikes, rifles and broadswords were not approached by anything of the kind that I had witnessed in Europe—it was fighting of the fiercest character. At the end of the struggle there was a hand-to-hand combat, which lasted until the victor stood triumphant over the bodies of the vanquished and tore off their masks. In these exercises, which were very severe, the cadets struck one another fiercely and with wild cries; but the moment a pre-arranged signal was given, or the fight came to an end, the combatants drew themselves up in a line and their faces assumed an expression of wooden composure.

"In all the public schools prominence was given to military exercises, and the scholars took part in them with enthusiasm. Even in their walks they practiced running, flanking and sudden unexpected attacks of one party on another. The history of Japan was everywhere made a means of strengthening the pupil's patriotism and their belief in Japan's invincibility. Particular stress was laid upon the country's successful wars, the heroes of them were extolled, and the children were taught that none of Japan's military enterprises had ever failed."

HEALTH OF ARMY HORSES—STATISTICS OF THE DIFFERENT ARMS.

(From *Artilleristische Monatshefte*, June 1909.)

The number of horses in the Prussian Army (including the 13th Wurttemberg Army Corps), was 86,104 as given in the statistical veterinary report of 1906.

Of these, 40,204, or 44.12 per cent received veterinary treatment. This is a most unfavorable condition and one which has not been reached within the last ten years (in 1905 only 36.9 per cent).

The cause lies in the frequent appearance of disease of the chest and colic.

Especially numerous cases of sickness were had in the

	Number of Cases
Army riding school.....	58.3%
Battery horses of foot artillery.....	56.6%
Cavalry.	48.9%

Below the average were—

Field artillery.	44.9%
Train.	37.4%
Machine gun detachments.....	31.5%
School of gunnery for field artillery.....	23.6%

(The most favorable health conditions.)

The great number of cases in the military riding school is due to the great demands made of the horses. Opinions are divergent as to the bad state of health of the horse detachments. Some give as a reason the lack of understanding in the care of a horse—while the very good condition in the machine-gun detachments, the personnel of which is not more familiar with horse management than is the one of the horse detachments, speaks against it. Others again give as cause of the low ability of resistance of the cold-blooded horses, the hardships imposed, and the inclemency of the weather. In comparison to what the horses are to perform in war, the demands made in time of peace

are trifling, especially since the normal feeding is assured. Could it not be that the pace required of the horses might be too fast? The very favorable state in the school of gunnery for field artillery is explained by the fact that they have no remounts, but only full-grown horses, and likely also, that the animals are kept in motion for long periods in the open during the summer and winter.

Translated by E. A.

THE LANGDON CARTRIDGE ATTACHMENT.

This consists of a device for holding twelve regulation cal. 38 revolver cartridges so arranged that they can be loaded into the cylinder of the revolver three at a time or two at a time or one at a time.

The attachment can be quickly fastened to any sort of a sword belt or saber belt without removing the belt plate or buckle or the slings or other attachments from the belt.

The attachment is held in place by means of tempered steel spring clips which are black japanned and so shaped as not to tear the clothing.

This device has had the test of hard wear in the Philippines.

ARTILLERY HARNESS BITS.

The principal function of artillery horses is draft—to surely get the battery to the proper place at the proper time; saddle qualities are of secondary importance. Therefore, whatever facilitates draft, should be thoroughly considered and adopted.

As to the saddle horse, his head is a heavy weight at the end of a long lever, and hence any movement of the head affects his balance. This point is fully recognized by all riders who exer-

cise great care in setting a saddle horse's head, and the progress in his training is slow, until his head has been gotten into position. Until this is accomplished, he is unsteady in his movements, affected as they are by the displacement of his head, and also by the displacement of the rider's weight, which is located on the horse in the form of an unstable top load. Movements of these two weights disturb the position of the animal's center of gravity, and consequently necessitate movements of his legs to recover his balance. The artificial conditions we thus impose on him, must be compensated for by artificial aids.

When a horse is in heavy draft, his feet, if the footing is at all precarious, slip and thus cause his center of gravity to continually shift. He naturally makes every effort to prevent such slipping by digging in his toes, as can be seen at any time by noticing a horse that is pulling a heavy load up hill. He is steadied while so engaged by two means—one is the resistance of the load, and the other is the pull on the reins, a good driver maintaining a strong support. Hence it appears that either a saddle or draft horse is in a state of more or less unstable equilibrium when at work. Where, as with the artillery harness horse, the animal is both a saddle and draft animal simultaneously, his equilibrium is doubly unstable, and special efforts are necessary to maintain his balance. This result can be aided only by the driver sitting as squarely and steadily as possible in the saddle, and maintaining a strong, even pull on the reins of both horses of his pair. This pull on the reins performs the double function of keeping the horse's head steady, and giving him something to lean against, or, in other words, affording a support, all with the purpose of keeping the equilibrium as stable as possible. Unless a horse can thus feel this assistance, he will not exert his full strength, nor can he be reasonably expected to do so, especially if his feet have slipped from under him a few times.

Incidentally, it may be mentioned that for a *short* effort the rider's weight, if put on the forehand as much as practicable, is an advantage to the horse in draft, since like heavy shoulders in an animal, it increases the weight in front of the point of support (the front foot in contact with the ground). But here, again, the horse must be supported to prevent slipping.

Any support on the reins is, of course, transmitted to the horse through the bit. If the curb is used, it is so painful that the animal will not go up against it; consequently he cannot exert his full strength. By then resorting to the whip, poor or inexperienced drivers soon make such a horse into a balker, and he is ruined. If the horse does go up against the curb, to a certain extent, his mouth, by constant repetition of the severe pressure, becomes so hard that at ordinary work the bit has but little effect, and hence the considerable number of hard mouthed horses in our service. Another point in this connection, though a minor one, is that the action of the curb is to bring in a horse's head and arch his neck, thus producing a swelling of the muscles of the throat, and consequent interference to some extent with his breathing, at the very time he needs all the wind he can get.

On the other hand, the snaffle is mild in its action and enables the driver to give the necessary support to his horses without inflicting pain. In addition, horses when purchased, are accustomed to working in this bit, while rarely has a new artillery horse ever had a curb in his mouth, due to the fact that they are generally fresh, young, unschooled horses of the light draft type, that have been worked on the farm or in delivery wagons or in light carriage driving. At the best, it takes some time before such a horse can be made to pull a heavy load up a steep grade if the curb is used. This point is important in the regular army and in the militia in time of peace; it is of the greatest importance in war, when the loss in horseflesh is heavy and time for training new animals very limited. In the recent war in the Far East both sides used the snaffle.

Proof of the unsuitability of the curb bit for untrained horses can be seen in almost any militia battery, where in an encampment it will generally be noticed that the horses (hired for the occasion), are rarely driven with the curb action, the usual custom being to either remove the curb chain altogether, or to attach the bridal reins to the upper rings of the bit—either method resulting in a snaffle, though a very poor one.

Additional advantages of the snaffle are, that one size fits all horses, thus avoiding the present multiplicity of sizes in curbs, that it is the simplest and cheapest bit used, that it is easily ad-

justed by even an inexperienced man, and that it has no attachments (chain, hooks, etc.), to be lost or broken, whereas the curb bit must be carefully fitted to each separate horse, and the attachments are constantly lost, broken or neglected by the men.

It is a platitude to say that no horse has naturally a hard mouth. The average horse when he enters the service has a very good mouth, and if he afterward loses it, it is due to the improper use of the curb bit.

It may be asked, if the snaffle is so much better, why was the curb ever introduced?

The answer is simple and merely requires going back a few years in history. In the days of the smooth bore gun and the muzzle-loading musket the range was short, that of the gun not greatly exceeding the musket. The artillery was then employed for the purpose of increasing the volume of fire at a desired point and the pieces were often brought up to the infantry firing line. Large masses of artillery were kept in reserve on the battle field itself and, at the thickest part of the fight, dashed up to the firing line at a gallop and unlimbered. Again, pieces fired canister at short range and as long as possible, and if then withdrawn, the limbers galloped up to the pieces and then galloped off with them. Such procedure necessarily required severe bits to certainly control the horses. When the breech-loading rifle was introduced its proper method of use was not at once seen, and it also dashed around at fast gaits and made sudden halts, requiring the curb bit. But as the gun improved, giving greater range, and the projectile improved with its fuze, either time or percussion, that could be depended upon, it was found that the old concentration of fire could be obtained without actually moving the pieces themselves, but by merely changing the direction of fire. Thus, suppose a force to occupy a front of about four miles; it is evident that a gun placed in the center could fire anywhere along the front, since its extreme range would have to be only about two miles or 3,500 yards. This, to a great extent, obviated the necessity of dashing around at a gallop, though it was many years before the fact was fully realized, for the military is decidedly a conservative profession, and the employment of war material is always more backward than its development. Proof of this is seen in the fact that up to five or six years ago

we still carried canister though its use had long been obsolete. In the same way we have continued the use of the curb bit, fostered in this case by the fast and unreal drills on the parade ground and in riding halls which do not, of course, represent any real work with the modern gun.

Artillery officers seeing these drills with empty chests formed their idea of mobility thereon, naturally clung to the curb bit, and overlooked the fact that empty chests are not a field condition. The United States is believed to be the only great nation of the world that uses the curb exclusively on its artillery team horses. In some countries the bit and bridoon is used on the near horse, but the snaffle on the off one, thus giving the driver an available snaffle on each horse.

It is thus evident that the snaffle is a much better bit for all artillery in war, for militia artillery in peace, and for regular artillery on marches, etc.

It therefore remains only to consider regular artillery in garrison work.

Actual test has shown that there are only two classes of horses that cannot be controlled by the snaffle. First a few newly purchased ones which by being driven at a fast gait at drill or review become overexcited by the noise of their new and strange surroundings and attempt to run away; second, a part of the old battery horses whose mouths have been ruined by the curb. As to the first class, by accustoming them gradually to their surroundings there will be few such animals and the few can soon be stopped if a cannoneer sets the brakes and especially if the chests are full of ammunition, and the drivers allow the runaways to do all the work. But the presence of such horses is, as a rule, an indication of incomplete training—the horse having been put to battery work too soon, instead of being gradually accustomed to his military surroundings. As to the second, they can sometimes be cured by using a snaffle, so placed in the mouth as to bring pressure on a part that has not been made callous by the curb.

In other cases, some horses learn that, by continuing to pull against the curb, their mouths become numb, and they do not feel the pain; such horses, in a short time, improve with the

snaffle, when they learn by experience that the bit does not necessarily hurt.

In some few cases the curb will be necessary; these cases can be determined only by actual experience. But in no case should this bit be used as a substitute for regular draft work, which is the best horse controller in existence.

CAPTAIN WM. J. SNOW,
Adjutant Sixth Field Artillery.

GRADUATING RIDE-MOUNTED SERVICE SCHOOLS.

The following program of the graduating ride at the Mounted Service School of Equitation at Fort Riley, July 2, 1909, has been furnished by one of the graduates. He writes: "I am enclosing a copy of the program of the graduating exercises of the Mounted Service School which may be of interest to those officers who are contemplating taking the course here. I consider that the year I have spent here has been the most profitable and interesting one of my life. I cannot speak too highly of the work done here and its value to the mounted services. Any officer who has an opportunity to take the course should by all means do so."

PROGRAM.

The indoor graduating ride, to be given in the School Riding Hall, beginning at 8:30 a. m., will be an exhibition of the details of the work in the course of Equitation and Horse Training—the methods pursued and the results obtained.

1. Breaking Class.

A division of young horses bred and raised in Wyoming and purchased in August, 1908. These animals have been acclimated and conditioned at the school remount farm, but were not handled or groomed until May 1 of this year. The two months of training prepare the young horses for the Training Class of

the ensuing year. The officer learns the methods of handling an absolutely green colt and the animal receives his instruction at the time when his trainer has a maximum of experience.

2. *Trained Bucker.*

Ridden by First Lieutenant N. E. Margetts, First Field Artillery.

3. *Training Class.*

A division of horses bred and raised in Missouri or Kentucky and purchased in September, 1907. These animals were handled in the Breaking Class of last year and have been ridden by the class of this year since November 1, 1908.

Training has been along lines adapted to military purposes only. Progress depends upon the individual ability of horse and rider.

4. *French "Sautcur."*

This horse has been trained by the senior instructor according to the methods prescribed at the Cavalry School at Saumur. He executes, at the signal, various jumps and kicks tending to unseat the rider. The animal is ordinarily spread-lined between two padded posts, but on this occasion will be ridden at liberty by his trainer, Captain W. C. Short, Thirteenth Cavalry.

5. *Training Class.*

An exhibition of jumping by a division of the horses described in No. 3. As the bones and tendons of young horses are not strong enough for hard work, the colts of this division are jumped but once a week.

With this division will also be exhibited the approved methods of using the cavesson and longe.

6. *Schooled Horses.*

A division of horses bred and raised in Missouri and purchased in June, 1906. These animals were broken by the class of 1907, trained by the class of 1908, and have been ridden during the entire year by the present class.

They serve two purposes in the education of the officer: he feels a correct response to properly applied aids, and learns what is expected of his individual training colt.

Moreover, these horses are not assigned; each is ridden daily by a different officer, who thus acquires experience in riding animals of different dispositions. The schooled horses will jump all reasonable obstacles.

7. Trained Jumpers.

A division of service horses transferred to this school from various organizations of the army as strong, free jumpers.

These animals are ridden without stirrups at the beginning of the course while the student officer is acquiring his seat, are used for instruction in indoor jumping and, during the spring, are used for cross-country work. Not assigned. A different rider daily.

July 3, at 8:30 a. m.

The entire class will ride the cross-country course in Magazine Cañon.

RANK OF NON-COMMISSIONED OFFICERS.

Recently there has been considerable discussion regarding the adjustment and re-arrangement of the rank of certain officers who suffered by the operation of the laws regarding promotion in force some time since.

Without going into the question of the right or wrong of the suggested adjustment there is no question but that it is unfortunate that the condition of affairs complained of does exist. Yet the same condition of affairs exists in every regiment in the service so far as the relative regimental rank of non-commissioned officers is concerned. To illustrate: A soldier is assigned to a troop, and in due course of time is appointed a corporal. He has been fortunate (or unfortunate) in being assigned to a troop where the non-commissioned officers are of fairly long

service, and where the changes are few. His prospects of promotion to a serjeanty are slim. Another soldier is assigned to another troop where the changes in the non-commissioned officers are frequent, and our second soldier is also appointed a corporal. In a short time he becomes a serjeant, while our first soldier remains a corporal with no prospect. To make the example a more conspicuous one suppose our second soldier is made a corporal some time after our first soldier, but gets his serjeanty first.

Both men being of equal ability, will it be unnatural for the first soldier to feel dissatisfied at the relative rank and pay of the two men? We see it every day among officers, and naturally it exists among the non-commissioned officers.

Is there a remedy?

Among officers the question of relative rank is confined to the arm of the service. It is believed that a workable and equitable method of regulating rank among the enlisted personnel can be worked out, and that this relative rank may be confined to regiments.

In working out this scheme the following assumptions are made: That date of first warrant should govern rank, everything else being equal. That *within the troop* the work of the non-commissioned officers (excepting the first serjeant and quartermaster serjeant) varies very little. This is naturally subject to some question but the working out of the problem will be shown later.

That *within the troop* a non-commissioned officer's authority is the same whether he is called serjeant or corporal, the man's *relative rank* determining his authority in the troop. That when non-commissioned officers come together the oldest non-commissioned officer in length of warrant should be the senior. That nothing is more irritating to the old corporal than to be bossed by a "Rooky" serjeant. That the troop is the *important unit* and nothing should be done to break up its spirit or unity.

Remedy: Instead of each troop being composed of eight serjeants and six corporals, let each regiment have ninety-six serjeants and seventy-two corporals (staff non-commissioned officers not here considered), let each troop be allowed fourteen

non-commissioned officers, at least two of whom shall be sergeants (first sergeant and quartermaster sergeant). Let the appointments of non-commissioned officers be as at present. When a vacancy occurs in the grade of sergeant promote the senior corporal in the regiment (if he is competent). The troop commander with a vacancy appoints a corporal in his troop, keeping up his quota of non-commissioned officers. The troop commander with the senior corporal merely calls him Sergeant Jones instead of Corporal Jones. In the troop Sergeant Jones has no more authority than Corporal Jones had. On guard Jones is not jumped by a corporal junior to him. On the payrolls Jones's pay is increased, due to his length of service. Jones is happy, the new corporal is happy, every man being paid, and having rank compensate with his length of non-commissioned service; and no one is hurt.

The extreme case will be where one troop will have all its non-commissioned officers corporals. This is, however, an extreme case, and the probability of its occurring is very slight. Even in this case the troop with all the corporals has non-commissioned officers just as efficient personally as though they were called sergeants. The amounts that the senior corporals are underpaid is practicably nil, while the scheme proposed will keep the troop spirit up, and will keep satisfied older corporals, even though their relative rank in the troop is slight.

It has been suggested that when a vacancy occurs that the senior corporal be promoted and transferred to the troop with the vacancy. This is objected to for two reasons, namely: the non-commissioned officer would be shifted to different troops, thus breaking up proper troop spirit; and the troop commander having the vacancy would have to take somebody else's appointee, instead of making one of his own men. This latter state of affairs resulting from the transfer of the promoted non-commissioned officer would be objectionable in the extreme.

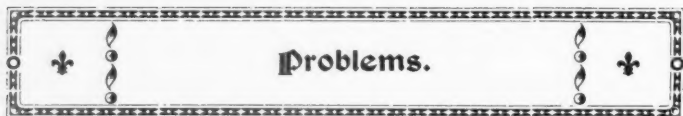
At first blush many will say that the scheme proposed is not practicable but it is firmly believed that a careful actual working out of the scheme will develop few real objections, and that these will easily be balanced by the resultant removal of one chance for growl, namely, relative rank, and by the fact

that non-commissioned officers' positions will be more secure, and soldiers who wander from one regiment to another on the chance that they can pick out a troop with easy promotion will find it less easy to get chevrons, the result being that it will be worth while to stay in one regiment—faithful service in one regiment will be rewarded, and the bright but erratic "rolling stone" will find more difficulty getting the promotion he seeks.

Result: Faithfulness rewarded. Greater permanency in non-commissioned officers. Greater efficiency.

The "Home Service" non-commissioned officer who spends his time in regiments in the states going from one regiment to another will be abolished and we will have in white regiments non-commissioned officers of long service in the regiment, such as the colored regiments enjoy now.

EDWARD L. KING,
Captain Second Cavalry.



PROBLEM NO. 12.

(See CAVALRY JOURNAL for July, 1909, page 172.)

SOLUTION.

First Requirement.

Captain A upon arriving at the crossing at Frenchman about 8:45 a. m., halts his troop. His advance guard has taken up temporary outpost duty during the halt. Captain A then makes a hasty reconnaissance of the immediate terrain with a view to utilizing it in the best way for a stubborn defense. His information of the enemy is not very precise but his mission is plain.

At 9:15 a. m. Captain A orders the following dispositions for defense:

One cossack post, one n.c.o. and three men, dismounted at the Flint House.

One cossack post, one n.c.o. and three men on small ridge 700 yards north of Frenchman dismounted.

One detached post, one n.c.o. and seven men, on the north edge of the top of Sentinel Hill dismounted.

One platoon, dismounted, is placed in position along the west bank of Salt Creek east of the bridge and ordered to prepare the sector occupied by it for defense by scarping the bank so as to form a banquette on which to stand and utilizing the natural bank as a parapet. Some slight clearing of underbrush is to be made.

Similarly one platoon, dismounted, is posted west of the bridge with similar orders for preparing the sector for defense.

Each platoon is ordered to take up a front of about 50 yards, thus leaving room for reinforcements to come into the firing line in case of attack.

A third platoon is held in reserve under the slope of the east bank of the stream which is about ten yards wide at the bottom. This platoon is ordered to prepare small trenches and rifle pits at the flanks of the position and on the east bank, so placed as to procure flanking fire up and down the stream and protect the main position from small parties of the enemy attempting to advance along the stream bed.

The horses are watered and placed under cover of orchard and hillside on the west slope of the ridge just west of Gauss House, near junction of ravines. One n.c.o. and eight men are left with the horses.

The bridge is prepared for rapid destruction should this become necessary.

Second Requirement.

Captain A, from his hasty reconnaissance of the terrain, notes that there are three methods of defending the crossing:

(a) Either to go *beyond* it and take a position just north of Frenchman, digging trenches so as to cover the Frenchman-Kickapoo road and sending a strong detachment to cover the Atchison Pike; this method might be modified by concentrating in trenches placed to cover both roads near the Frenchman house.

(b) To occupy the high ground just south of the bridge, utilizing the orchard for cover, and destroying the bridge.

(c) To occupy the bed of the stream itself, prepare bridge for destruction, and utilizing the bank of stream as a parapet.

Captain A has decided on the latter course because of the peculiar nature of the terrain, and the small force at his disposal.

When Captain A desires, or is forced to withdraw, he will not have an obstacle in his way as he would have had by the first method.

The enemy in attacking the position taken up by Captain A will not have the stream bed for an avenue of approach as he would have had by the second method.

Captain A, by choosing the third method, will also be able to get a greater number of rifles on the firing line than would have been possible in either of the other methods, for he can reduce his horse holders to a minimum.

The field of fire offered by the position chosen is equally good if not better than from either of the other positions; grazing fire will be secured.

Concealment of position and strength of force holding it is an important consideration, and it is believed that the method chosen procures this advantage.

That the enemy may be taken by surprise and the defending force secured against it, seems also to be attained by Captain A.

If a serious attack is made, the enemy will actually have to come hand to hand with the defenders to carry the position.

In either of the other methods field guns from Taylor Hill or from a position west of it, would have a much better target. In the selected position, due to the natural cover of the fringe of trees, it will be difficult for the enemy to observe accurately the effect of any of his artillery fire.

Again a flank or turning movement is less to be feared, though of course it is possible. In this connection Captain A would, if time permitted, undoubtedly prepare a simple narrow trench on the ridge that the Baker House stands on, but this would be a later measure and not contemplated in his original dispositions.

A night attack is less easy of success than it would be in either of the other methods.

Captain A secures fairly good cohesion of his force and simplicity in its command.

Water is conveniently at hand for both men and horses.

Captain A should be able to give his horses more rest by this plan of defense than in either of the other two plans, and in a campaign, this consideration must weigh heavily when deciding on measures to be taken. Other things being equal it is believed that this alone would justify Captain A in his decision.

PROBLEM NO. 13.*

(See map of Fort Leavenworth—CAVALRY JOURNAL for July, '07.)

SITUATION.

Missouri and Kansas have declared war against each other.

The First Division, Missouri troops, has advanced to the Missouri River, seized the terminal bridge (the Fort Leavenworth bridge having been washed out by the last high water), and, during the afternoon and evening of August 31st, 1909, has crossed to the Kansas side.

Cavalry detachments sent out at dawn on September 1st have found Atchison Hill and Sheridan's Drive held by the enemy. At 6 a. m. Colonel A, commanding the divisional cavalry, with the bulk of his regiment, which is in assembled formation, is near point 66, when he receives the following message from the division commander:

Prison Hill, 1 Sep't., '09, 5:50 a. m.

Colonel A, First Cavalry:

I am reliably informed that a hostile force, about a division, was encamped yesterday afternoon near Lowemont, about ten miles northwest of here. The line Atchison Hill-Sheridan's Drive is now held by the enemy in some force.

The division will advance at once for the purpose of capturing that position. You will coöperate in the movement, operating against the hostile right and rear. Btry. A. 2d F. A. (horse) has been sent to you.

Send messages to Prison Hill.

X,
Maj. Gen'l.

The discharge of hostile artillery is now heard from the direction of Atchison Hill. A trooper, who had been with an officer's patrol, rides up and reports that he has just come rapidly from Hund Hill where the patrol was surprised by a large cavalry advance guard (he did not know how many men it had), which was then advancing at a trot. The patrol scattered and he does not know what became of the other members. By the time this information is obtained, the captain of the horse battery with his command has reported to Colonel A.

Required:

1. Colonel A's estimate of the situation.
2. His initial orders.

*The approved solution will appear in the September number of the CAVALRY JOURNAL.



A PLAN TO PROMOTE THE EFFICIENCY
of the
CAVALRY, FIELD ARTILLERY, COAST ARTILLERY
AND INFANTRY.

For several months past the Fort Leavenworth Branch of the U. S. Cavalry Association has had under discussion the above subject. A committee was appointed to prepare the plan to be discussed by the Branch with a view of evolving a scheme of promotion that would be satisfactory to not only the cavalry service, but the entire line of the army as well; a plan on which all could unite and which would, if practicable, equalize promotion in the line.

This committee prepared an elaborate report with tables, etc., showing the effect the proposed scheme would have on promotion on the several arms. This report was fully and freely discussed at several meetings and the first four propositions, as finally amended, were adopted as follows:

I. That the number of officers in each arm of the service should not be determined wholly by the enlisted strength and organization of the respective arm, but should be fixed by law in accordance with the needs of the service.

II. That, whenever the number of officers, in any grade of any arm of the service is increased, the other arms, by the voluntary transfer of officers in such grade to the same grade of the arm thus increased, should receive their proportionate share of the said increase, based on the number of officers in each arm respectively, before such increase. *Provided*, that if the requisite number of officers in such grade do not voluntarily transfer, that number of the senior officers of the next lower grade, as may volunteer in order of seniority shall be promoted and transferred; and *Provided*, that any

officer so transferred and promoted who may be junior to any officer of the arm to which he is thus promoted and who by this promotion becomes senior to such officer of the arm to which transferred, such promoted officer shall remain at the foot of the list to which promoted until those who were previously senior in that arm shall have been promoted and who upon such promotion shall revert to their former status of seniority.

III. That the ratios between officers of different grades should be the same in all arms of the service, and that, by means of the so-called extra officers bill, and the detailed staff, these ratios should be so fixed as to correct, as far as practicable in this manner, the existing irregularities in promotion.

IV. That additional regularity and rapidity of promotion as far as necessary and practicable for the efficiency of the service should be secured by eliminating the inefficient in all grades (with or without pay depending on whether or not the inefficiency is due to their own acts or omissions), and by retiring the least efficient in the grades of colonel, lieutenant-colonel and major with the rank and three-fourths the pay of the next higher grade; *provided* that any field officer of thirty years' service may elect voluntarily to retire with the next higher grade.

The following additional propositions, intended to provide recognition of specially meritorious service and the elimination of the inefficient of all grades, are in harmony with the four propositions given above and were approved or rejected as noted after each:

V. That no officer of the line of the army below the grade of colonel shall be promoted until he has been declared by a board of officers of the army to have passed a very thorough mental and physical examination. The mental examination to be as practical as possible and to cover sufficient ground to demonstrate whether the officer has made the best use of his opportunities in his present grade and is thoroughly prepared to perform the duties of the grade to which he is to be advanced. No officer to be promoted unless he is recommended for promotion by the board which examined him. If the officer is found disqualified physically by reasons of physical disability contracted not through his own misconduct, he is to be retired as now provided by law. Should he be found disqualified mentally he is to be wholly retired on one year's pay if his examination is for promotion to the grade of first lieutenant or captain, if for promotion to a grade above that of captain he is to be retired on a fixed per cent of his pay.

Adopted.

VI. That some means should be provided whereby specially meritorious service can be rewarded and for this purpose a board should be convened once a year with authority to make a thorough investigation of all officers whose services might be considered exceptionally good, and if the board believes that there are any officers whose services entitle them to special recommendation, the President may nominate them for promotion to the

next higher grade. Officers so promoted to remain at the bottom of the grade to which they have been promoted until all officers who were senior to them have been promoted, when they will take their regular place in the line. No officer to be advanced more than one grade.

This proposition provoked considerable discussion and was finally rejected by about a two-thirds vote.

VII. That in time of peace a board of general officers should be convened to recommend to the President the names of a certain number of colonels of the line whom the board considers qualified for promotion; the President to make his selection from those so recommended.

Adopted.

VIII. That no person except graduates of the Military Academy shall be appointed a second lieutenant in the army until he is recommended by a board for such appointment, after having passed a thorough examination.

Adopted.

IX. That the Articles of War be so amended as to provide that when an officer is sentenced to dismissal by a court-martial the convening authority must approve or disapprove so much of the sentence as carries dismissal, but that it cannot be mitigated.

This proposition was not adopted, as it was believed by some that such a proposition would trench upon the prerogative of the President to grant reprieves, etc., and therefore unconstitutional.

The report of the committee mentioned above, in addition to the several propositions noted, was as follows:

The following calculations are intended merely to illustrate the application of the first four of the propositions submitted to our organization and to show their effect on promotion and the retired list. It is not claimed that this detailed solution of the problem is the best that can be made under the general scheme here outlined. The vote on the above propositions will not be considered an expression of opinion concerning what follows.

When the field and coast artillery have filled the grade of second lieutenant to the maximum authorized by law, the number of officers in each grade in each arm, respectively, will be as follows, not including the detailed staff or Porto Rico regiment:

TABLE I.

GRADE.	Infantry.	Cavalry.	F. A.	C. A.	Totals.
Colonel	30	15	6	14	65
Lieutenant-colonel	30	15	6	14	65
Major	90	45	12	42	189
Captain	450	225	66	210	951
First lieutenant	450	225	78	210	963
Second lieutenant	450	225	78	210	963
Totals	1500	750	246	700	3196

The ratios in the infantry, cavalry and coast artillery between officers of different grades are the same and are as follows:

Colonels to lieutenant-colonels	1 to 1
Lieutenant-colonels to majors	1 to 3
Majors to captains	1 to 5
Captains to first lieutenants	1 to 1
First lieutenants to second lieutenants	1 to 1

To secure the same ratios in the field artillery without reducing the number of officers in any grade, officers must be added to the field artillery in the different grades as follows:

Colonels	0
Lieutenant-colonels	0
Majors	6
Captains	24
First lieutenants	12
Second lieutenants	12
Total	54

The number of officers in each grade of each arm after this increase is as follows:

TABLE II.

GRADE.	Infantry.	Cavalry.	F. A.	C. A.
Colonel	30	15	6	14
Lieutenant-colonel	30	15	6	14
Major	90	45	18	42
Captain	450	225	90	210
First lieutenant	450	225	90	210
Second lieutenant	450	225	90	210
Totals	1500	750	300	700=3250

To illustrate how this increase will be distributed, consider the grade of captain. Before making the increase the total number of captains is 951. Accordingly the twenty-four vacancies in the grade of captain will be divided among the four arms so as to give the infantry 450/951 of 24, or 11+; to the cavalry 225/951 of 24, or 6+; to the field artillery 66/951, or 2—; and to the coast artillery 210/951, or 5+.

The increase in the other grades would be similarly distributed, the inequalities due to the fractions being regulated in the most equitable manner possible.

To illustrate further: The eleven vacancies in the grade of captain to be filled from the infantry promotes the eleven senior first lieutenants of infantry to field artillery. As far as practicable for the best interests of the service, captains who desire, not to exceed eleven, will be allowed to transfer to the field artillery. If none so wishes to transfer, the eleven lieutenants promoted will be transferred by the Secretary of War.

Similarly, cavalry captains who so desire, not to exceed 6, may be allowed to transfer to the field artillery, or, failing such voluntary transfers, the 6 senior first lieutenants of cavalry will be promoted and transferred. And in like manner the 5 vacancies to be filled from the coast artillery will be disposed of.

By this process each arm will be given its proportionate share of every increase made in any grade of any arm.

The number of officers in the different grades of the staff departments, not including the Medical Department, Engineer Corps, and Chaplains, and their proper distribution to the different arms of the service are as follows: ¹

TABLE III.

GRADE.	IN STAFF DEPT'S.	DISTRIBUTION TO ARMS OF SERVICE.			
		Inf.	Cav.	F. A.	C. A.
Colonel	29	13+	7—	3—	6+
Lieutenant-colonel	42	19+	10—	4—	9+
Major	100	46+	23+	9+	22—
Captain	155	72—	36—	14+	33+
First lieutenant	43	20—	10—	4—	9+
	369	170	86	34	79

After the staff departments are wholly filled by details from the line, the number of officers in each grade of each arm should be as follows:

TABLE IV.

GRADE.	Inf.	Cav.	F. A.	C. A.	Total.
Colonel	43	22	9	20	94
Lieutenant-colonel	49	25	10	23	107
Major	136	68	27	64	295
Captain	522	261	104	243	1130
First lieutenant	470	235	94	219	1018
Second lieutenant	450	225	90	210	975
	1670	836	334	779	3619=3619

This addition of officers has disturbed the original ratios existing between officers of different grades, so that they are no longer what they were originally, but they remain practically the same in the different arms of

¹ The officers of the Judge Advocate General's Department are included in the detailed staff of the army in the letter of the Secretary of War accompanying S. 7254 and dated May 28, 1908, and they are included in this calculation also.

the service. Thus the ratio of colonel to lieutenant-colonel which originally was 1 to 1 is now, for the infantry 1 to 1.14; for the cavalry 1 to 1.14; for the field artillery 1 to 1.11; and for the coast artillery 1 to 1.15.

Tabulated, this and similar information for the other grades will appear as follows:

TABLE V.

GRADE	OLD RATIO	NEW RATIO.			
		Inf.	Cav.	F. A.	C. A.
Colonel to lieutenant-colonel.....	1-1	1-1.14	1-1.14	1-1.11	1-1.15
Lieutenant-colonel to major.....	1-3	1-2.77	1-2.72	1-2. 7	1-2.78
Major to captain.....	1-5	1-3.84	1-3.84	1-3.85	1-3.80
Captain to first lieutenant.....	1-1	1- .90	1- .90	1- .90	1- .90
First lieutenant to second lieutenant..	1-1	1- .95	1- .95	1- .95	1- .95

In the three higher grades may be noted a marked change in the ratios, over the old ratios, in favor of better promotion. This improvement may become more marked by making a proper distribution to grades of the officers provided for in the extra officers bill, presupposing it will be enacted into law.

In the following table the 612 officers are distributed to the different grades in accordance with the ratios prescribed in the bill as it passed the Senate, except that the 126 second lieutenants are distributed among the other grades. This is done because it is believed second lieutenants should spend their entire service in that grade with troops, especially so if they are to remain in that grade but 5 or 6 years.

Note—(The Warren bill provides for 36 colonels, 54 lieutenant colonels, 90 majors, 162 captains, 144 first lieutenants and 126 second lieutenants.)

TABLE VI.

GRADE.	Pres. No. Officers.	Ex. Officers Bill.	No. After Passage of Bill.	RATIOS.
Colonel	94	46	140	Colonel to lieutenant-colonel..1-1.24
Lieutenant-colonel	107	68	175	Lieutenant-colonel to major...1-2.33
Major	295	113	408	Major to captain.....1-3.27
Captain	1130	204	1334	Captain to first lieutenant....1- .90
First lieutenant	1018	181	1199	1st lieutenant to 2d lieutenant.1- .81
Second lieutenant	975	000	975	
Totals	3619	612	4231	

How large a measure of relief will be furnished by this readjustment of the ratios by means of the detailed staff and extra officers bill will be shown by an application of the mortuary and casualty tables to the 4th column in the above table, and any further relief necessary should be secured

by the elimination of the least efficient in the grades of colonel, lieutenant-colonel and major, by retiring them with the rank and 75 per cent of the pay of the next higher grade.

From the letter of the Secretary of War accompanying S. 7254 (The Elimination Bill) are taken the following percentages of each grade eliminated annually because of death, resignation, dismissal, dropping, wholly retiring, and retiring with 75 per cent of pay:

Generals	29.00 per cent
Colonels	5.90 per cent
Lieutenant-colonels	4.60 per cent
Majors	3.50 per cent
Captains	2.27 per cent
First lieutenants	1.88 per cent
Second lieutenants	1.88 per cent

Applying these percentages to column 4 in the above table, the number of officers in each grade eliminated and promoted annually is as follows:

TABLE VII.

GRADE.	ELIMINATED ANNUALLY.	PROMOTED ANNUALLY.
Generals	9.25	
Colonels	8.26	9.25
Lieutenant-colonels	8.05	17.51
Majors	14.28	25.56
Captains	30.28	39.84
First lieutenants	22.54	70.12
Second lieutenants	18.33	92.66
		110.99 new appointments to grade of second lieutenant.

A glance will show that natural causes do not create sufficient vacancies to give the desired promotion, and relief must be secured by elimination of the inefficient in all grades, and of the least efficient in the grades of colonel, lieutenant-colonel and major. As a basis for our calculations we will seek a solution which will promote an officer to the grade of major after ten years' service as a captain.

During an officer's first year of service as captain 30.28 captains senior to him are eliminated by natural causes; during his second year as captain $9/10$ of 30.28 or 27.25 captains senior to him are so eliminated and during his ten years as a captain $[(30.28 - 27.25) + 30.28] \times 10/2 = 166.54$ captains senior to him are eliminated. Resolving this progression into an equivalent one of 2560 terms (instead of 10) we obtain an almost absolutely accurate result, and find it to be 151.48. This has the effect of reducing the total number of captains for the purposes of this calculation by 151.48, giving $1334 - 151.48 = 1182.52$; and $1/10$ of this number, or 118.25 must be promoted annually. Referring to the table it will be seen that 39.84 are promoted annually to fill vacancies created by natural causes; consequently $118.25 -$

39.84—78.41, say 78 will be the number of vacancies that must be created by elimination.

It is impossible to say how many of these vacancies will result from the elimination of the *inefficient*, and the discussion will be continued on the supposition that *all* will be created by the elimination of the *least efficient* colonels, lieutenant-colonels and majors. This means that seventy-eight colonels, lieutenant-colonels and majors must be eliminated annually in this manner, say ten colonels, twenty-eight lieutenant-colonels and forty majors.¹

With this arrangement, the length of service in each grade will be as follows:

Lieutenant-colonel	4 years (a trifle less)
Major	4½ years
Captains	10 years
First lieutenant	7½ years
Second lieutenant	5½ years (or a trifle less)

And the ages at promotion to the different grades respectively will be as follows, on the supposition that the average age on entering the service is 23 years:

To a First lieutenant	28½ years
To a Captain	36 years
To a Major	46 years
To a Lieutenant-colonel	50½ years
To a Colonel	54½ years

The following table compares the length of service in each grade and the ages at promotion under this plan, with similar data under the plan proposed in the S. 7254—(The Elimination Bill).

TABLE VIII.

GRADE.	Length of Service in Years		Ages at Promotion to Next Higher Grade	
	Under this plan	Under S. 7254	Under this plan	Under S. 7254
Lieutenant-colonel	4	4	54½	54
Major	4½	6	50½	50
Captain	10	10	46	44
First lieutenant	7½	7	36	34
Second lieutenant	5½	4	28½	27

A brief examination will show that the plan will accomplish more than is expected of it, if it is put into full force at one time. Applying the plan gradually, so as to have it in full force at the end of five years, we secure the desired results as will be shown by the following examples:

Of the extra officers, in the grades of colonel, lieutenant-colonel and

1. The elimination bill (S. 7254) proposes to eliminate annually, 38 lieutenants, 44 captains, 14 majors, 6 lieutenant-colonels and 3 colonels, a total of 105.

This is for an organization of 3598 officers; for an organization of 4231 officers the total would be one hundred and twenty-three officers or forty-five more than contemplated by this plan.

major, the cavalry should get 11, 15 and 26 respectively. Adding these numbers to the numbers in each of these grades respectively at the present time (including those of the detailed staff that have already been absorbed) we find that the number of officers of cavalry in the three grades under consideration, immediately on the passage of the extra officers bill, will be as follows:

Colonels	27
Lieutenant-colonels	32
Majors	76

Of the 78 colonels, lieutenant-colonels and majors to be eliminated annually, $75/325$ of $78=18$ will be from the cavalry in order to give it its proper share of the promotions, and distributed to the three grades as follows:

Colonels	2.30
Lieutenant-colonels	6.46
Majors	9.24
	<hr/> 18.00

For the purposes of this illustration we will consider the colonels and lieutenant-colonels ($2.30+6.46=8.76$) in one class. If the plan is to be in full force at the end of five years:

	Colonels and Lieutenant-Colonels Eliminated in
$1/5 \times 8.76=1.752$	first year
$2/5 \times 8.76=3.504$	second year
$3/5 \times 8.76=5.256$	third year
$4/5 \times 8.76=7.008$	fourth year
$5/5 \times 8.76=8.76$	fifth year

Of the 25.56 majors promoted annually to fill vacancies created by natural causes (see Table VII) $45/195$ of $25.56=5.9$ are promoted from the cavalry. Consequently the number of majors promoted annually in the cavalry to fill vacancies created by this plan and by natural causes will be as follows:

During the 1st year	$1.752+5.9=7.652$
During the 2d year	$3.504+5.9=9.404$
During the 3d year	$5.256+5.9=11.156$
During the 4th year	$7.008+5.9=12.908$
During the 5th year	$8.76+5.9=14.66$
During the 6th year	$8.76+5.9=14.66$
Etc.	Etc. Etc.

Let us now consider the case of Gray who is 47 (register of 1909) on the list of captains of cavalry. The extra officers bill will create $11+15+2=28$ vacancies above him, and will move him up to $52-47=5$ on the list of majors. There must be $76-5=71$ vacancies created before he is promoted to his lieutenant colonelcy. Accordingly, he will get his promotion during his 6th year as a major.

Let us now consider the case of Fitch who is 247 (register of 1909) on the list of captains of cavalry. Of the 39.84 captains promoted annually to fill vacancies created by natural causes (see Table VII) $225/975$ of $39.84=9.19$ are promoted from the cavalry. Consequently, the number of captains promoted annually in the cavalry to fill vacancies created by this plan and by natural causes will be as follows:

During the 1st year one-fifth	(18) + 9.19 = 12.79
During the 2nd year two-fifths	(18) + 9.19 = 16.39
During the 3rd year three-fifths	(18) + 9.19 = 19.99
During the 4th year four-fifths	(18) + 9.19 = 23.59
During the 5th year five-fifths	(18) + 9.19 = 27.19
During the 6th year	(18) + 9.19 = 27.19
Etc.	Etc.

The extra officers bill will create 52 vacancies above Fitch, placing him $247-52=195$ on the list of captains of cavalry. Making proper allowance for the *captains of cavalry senior to Fitch* who will be eliminated for *natural causes* (see Table VII), it will be seen that he will get his promotion during the 9th year after the plan is put in operation. That he gets his promotion a few months before he completes his ten years as a captain, is due to the 52 files given him by the extra officers bill.¹

In like manner we may determine the effect the plan will have on the promotion of any officer.

The following calculations will show the effect of this plan on the retired list:

Of the officers eliminated annually for natural causes (see Table VII) the following percentages in each grade are retired:²

Generals.	88.9 per cent
Colonels.	60.1 per cent
Lieutenant-Colonels.	61.1 per cent
Majors.	58.9 per cent
Captains.	41.9 per cent
First Lieutenants.	8.7 per cent
Second Lieutenants.	8.7 per cent

Accordingly, the actual number retired in each grade annually for natural causes is as follows:

Generals.	9.25×88.9 per cent = 8.22
Colonels.	8.26×60.1 per cent = 4.96
Lieutenant-Colonels.	8.05×61.1 per cent = 4.91
Majors.	14.28×58.9 per cent = 8.41
Captains.	30.28×41.9 per cent = 12.68
First Lieutenants.	22.54×8.7 per cent = 1.86
Second Lieutenants.	18.33×8.7 per cent = 1.59

¹ The calculations with respect to the promotion of Captains Gray and Fitch are not *absolutely* accurate, since they do not take into account the slight gradual increase in the number of officers in the different grades due to the absorption of the detailed staff by the line. However, this will not materially affect the results.

² These percentages are deduced from the data contained in Table VI of the letter of the Secretary of War accompanying S. 7254.

Of the 8.22 generals, 6.25 are brigadiers.

And the total numbers retired annually will be the above plus those retired under this plan with the grades of lieutenant-colonel, colonel and brigadier general. In each grade the number is as follows:

Brigadier Generals	$6.25 + 10 = 16.25$
Colonels.	$4.96 + 28 = 32.96$
Lieutenant-Colonels.	$4.91 + 40 = 44.91$
Majors.	$= 8.41$
Captains.	$= 12.68$
First Lieutenants.	$= 1.86$
Second Lieutenants.	$= 1.59$

Now, if we suppose the process of retirement to continue until the total number of deaths annually in each grade just equal the acquisitions from new retirements, we have the ultimate composition of the retired list, which can be arrived at in the following manner: From Tables VI and VIII of the letter of the Secretary of War accompanying S. 7254 it may be seen that it will take 31.96 years to attain the ultimate composition of the retired list in the grade of lieutenant, 25.64 years in the grade of captain, and 21.53 years, 18.73 years, 15.77 years and 12.25 years in the grades of major, lieutenant-colonel, colonel and brigadier-general, respectively.

Accordingly, the number of line officers ultimately in each grade of the retired list will be as follows:

Lieutenants.	$(1.86 + 1.59) \times 31.96 =$	110.26
Captains.	$12.68 \times 25.64 =$	325.11
Majors.	$8.41 \times 21.58 =$	181.06
Lieutenant-Colonels.....	$\left\{ \begin{array}{l} 4.91 \times 18.73 = 91.86 \\ 40. \times 21.53 = 861.20 \\ \hline 953.06 \dots\dots 953.06 \end{array} \right.$	
Colonels.....	$\left\{ \begin{array}{l} 4.96 \times 15.77 = 78.21 \\ 28. \times 18.73 = 524.44 \\ \hline 602.65 \dots\dots 602.65 \end{array} \right.$	
Brigadier-Generals.....	$\left\{ \begin{array}{l} 6.25 \times 12.25 = 76.56 \\ 10. \times 15.77 = 157.70 \\ \hline 234.26 \dots\dots 234.26 \end{array} \right.$	
Major-Generals =		21.18
Lieutenant-Generals=		3.03
		<hr/> 2430.61

The following table compares the retired list of the line of the army as it will be ultimately under existing conditions, under the Elimination Bill (S. 7254), and under this scheme:

TABLE IX.

ULTIMATE COMPOSITION OF RETIRED LIST OF THE LINE OF THE ARMY.

Grade	Under Present Conditions	Under the Elimination Bill	Under this Scheme
Lieutenants.	197.35	1,304.22	110.26
Captains.	423.42	1,399.60	325.11
Majors.	153.07	420.80	181.06
Lieutenant-Colonels.	76.48	162.22	953.06
Colonels	320.99	103.29	602.65
Brigadier-Generals.	86.75	76.67	234.26
Major-Generals.	21.69	21.18	21.18
Lieutenant-Generals.	4.34	3.03	3.03
Totals.	1,284.09	3,491.01	2,430.61

In comparing the above lists it should be borne in mind that the second and third columns are the retired lists for an organization of 3,598 officers, while the fourth column is calculated on an organization of 4,264 officers. Calculating the second and third columns on the larger organization, the totals will be considerably greater, and probably will exceed 1,500 and 4,000 respectively.

The annual cost of each of these retired lists is as follows:

Under present conditions.	\$3,862,647.66
Under the Elimination Bill.	5,108,963.57
Under this scheme.	8,142,000.00

The last amount has been calculated under the supposition that officers in each grade are retired at the mean of the extreme ages for that grade. Before comparisons are made, the costs of the retired lists under present conditions and under the Elimination Bill should be increased to what they would become for a retired list recruited from an organization of 4,264 officers. This increase will be approximately 665/3598 of the amounts given above. After the increase is added the amounts will be:

Under present conditions.	\$4,577,633
Under the Elimination Bill.	\$6,054,646

The ultimate cost of the retired list under this scheme will thus be approximately \$3,564,367 more than what it would be under existing conditions, and approximately \$2,087,354 more than it would be under the Elimination Bill, considering an organization of 4,264 officers on the active list in each case.

However, since the officers on the active list will be younger under this plan, and consequently drawing smaller amounts as increased pay for length of service, the cost of the active list will be reduced about \$270,000.

Of the officers ultimately on the retired list about 1,000 are under 64 years of age and subject to the call of the government at any time. They would form a military asset, which, in an emergency, will be second only in value to the active regular army and the organized militia.

By eliminating 9 colonels, 22 lieutenant-colonels and 35 majors (a total of 66 instead of 78), the length of service in each grade and ages at promotion are as follows:¹

Grade	Length of Service in years	Age at Promotion to next higher grade
Lieutenant-Colonel.	4 (a trifle more)	57
Major.	5	53
Captain.	11	48
First Lieutenant.	8	37
Second Lieutenant.	6 (a trifle less)	29

As already stated, it is not practicable to determine how much the cost of the retired list will be reduced by reason of wholly retiring officers in all grades because of inefficiency due to their acts or omissions. It is possible, however, that the number thus wholly retired annually plus 66 (instead of 78) eliminated in the grades of colonel, lieutenant-colonel and major would be sufficient to give the promotion desired. If so, the ultimate annual cost of the retired list would be reduced by \$855,465, making it \$2,708,902 more than under present conditions, and \$1,231,889 more than under the Elimination Bill.

¹ This is 57 less than would be eliminated under S. 7254 for a like organization.

REMOUNTS AND REMOUNT DEPOTS.

While it is yet too early to judge as to the results and benefits following from the establishment of the one remount depot at Fort Reno and the plan of training young horses there for the mounted services, still there is no doubt that it is a step in the right direction and that the establishment of other depots in accordance with the plans of the quartermaster general will follow as funds are available.

Captain C. H. Conrad, Jr., Third Cavalry, is now in Virginia purchasing young horses to be sent to the remount depot, and incidentally studying the characteristics of Virginia horses and also the feasibility of establishing another remount depot in that section.

Regarding the adaptability of these young horses for our service after being trained and being fully developed, he writes:

"It is hoped to ultimately mount our cavalry on half-bred horses which are probably the best for our purposes in the world.

"The reputation of the Virginia half-bred is of the best and probably no horse is more widely or better known as a hunter. I believe that by putting in thoroughbred stallions with free service, that all the small farmers will breed horses for us and give the refusal of the colts at three years old for a price set the day the mare is covered.

"The colts would cost us about \$125.00 when purchased and when broken and finished will be issued to the troops as five-year-olds at a cost of about \$250.00 each. In time, if these ideas could be followed out, we would have as well mounted cavalry as any in the world. Now we are about as poorly mounted as we could be and rank with the armies of South America, in that respect, instead of with the great powers of Europe.

"If a remount depot is established in these parts, the government will eventually make entries in the many horse shows of Virginia and should give a cup to the breeder of the best mounts each year. It would take some three to five years to get such a plan into full operation and until that period has elapsed, it has occurred to me that the cavalry, through its association, should do something towards helping this movement.

"I think that the Cavalry Association could well afford to offer a cup, costing say, from \$50.00 to \$75.00, each year for the half-bred colt, three or four-year-old, winning the greatest number of blue ribbons in the shows of the Virginia Horse Show Association. There are ten or twelve fine shows in Virginia each year and as the people of the state are enthusiastic about this scheme, it would be an easy matter to have such a class made. All half-bred horse owners would try and win this cup, and the spectators, but more particularly the breeders, would become educated as to the kind of horse that we want.

"It can be easily arranged to have photographs of all of the blue ribbon winners and these could be reproduced in the *Cavalry Journal* and thus help educate the eye of the mounted officers by showing them a dozen or more photographs each year of typical cavalry horses.

"It appears to me that the Cavalry Association can well afford to spend \$75.00 or even \$100.00 each year for this pur-

pose. The fact that the U. S. Cavalry Association has offered a cup and the conditions under which it would be awarded can be made known with little trouble and expense."

The Executive Council would be pleased to hear from our members regarding this proposition as to giving a cup for the purpose indicated by Captain Conrad.

All the Continental countries of Europe, with a few minor exceptions, now encourage the breeding of suitable horses for their armies and to this end give prizes and offer other inducements, such as free service of stallions to farmers and breeders.

Of all of the great powers of Europe, England alone has done but little in this line and in consequence has encountered great difficulty in keeping her army supplied with proper mounts, especially in time of war. During the Boer War England purchased thousands of horses in this country, which many believe, under a strict interpretation of the laws of war, should not have been permitted.

The following extract from the *Broad Arrow* is one of many similar articles that have appeared in the British service journals on this subject.

"In his speech at Scarborough on the 18th ult., dealing with the question of horse breeding, the Earl of Carrington, President of the Board of Agriculture, pointed out that it was generally admitted that this industry was in a most unsatisfactory condition, and from statistics at hand there were 10,000 less foals dropped this year than last. We would suggest that the President of the Board of Agriculture urge on the members of the present government the absolute necessity of increasing the funds at present at the disposal of the Royal Commission on Horse Breeding. The £5000 granted for premiums is a mere dole, and we can fully understand that the commission cannot put forth any recommendation unless it has hopes that the government grant will be enormously increased. Lord Carrington is of opinion that a practical body should be created to deal with this subject of such paramount importance, and that this committee should be responsible to Parliament, instead of to no one, as is the present unsatisfactory arrangement, and that its members should be representatives of the War Office, the Board of Agriculture, practi-

cal horse dealers, and members of the various agricultural societies. However that may be, Lord Carrington must be well aware that without the prospect of a large amount of money being available, the work of such a committee would be of little value. At present the War Office will only buy remounts at five years, and then pays only £40 for an animal, whereas the farmer rightly maintains that unless he can sell his stock at three years such a price does not pay him. The result of this is that the War Office only gets the misfits of the horse breeding industry. No doubt in time of peace our requirements in military horse flesh can be easily met, but the reserve of good horses in this country suitable for an emergency is totally inadequate. Mr. Haldane has given no attention whatever to the supply of horses in time of war, yet of what use will his Expeditionary Force and Territorial Army be when mobilized if a sufficiency of horses are not available. Lord Carrington seems to consider that the French system, which he explained in his speech, of obtaining horses for military purposes is one that would be both satisfactory to the breeder and the government, in which case let us have no more idle talk, but let the Minister for Agriculture impress on the government that some scheme on the lines adopted in France should be set on foot in this country."

SELECTION VERSUS SENIORITY.

Two able and important articles under the above title have recently appeared in the *Journal of the U. S. Infantry Association* which are timely and are worthy of the attention of our thinking officers.

The first is by Major F. J. Kernan, General Staff, and the second by Major R. H. Noble, First Infantry.

This question of promotion by selection and elimination as well as that of reorganization, which are of such vital importance to the army, undoubtedly will be brought to the attention of Congress at the coming session and will be urged to a passage by the

War Department authorities. It is therefore well to discuss these matters in all their phases and, if possible, to bring forth arguments in favor of the best and wisest scheme that the army can evolve; to provide all possible safeguards for a fair and just scheme for selection—for promotion by selection *it is going to be* in some form—and to provide equal justice for the *efficient* officers of the army.

The Kernan article first gives a resumé of the laws and customs regarding promotion in the leading armies of Europe and also in Japan from which it appears that all have some system of promotion by selection, wholly or in part, and that nearly all have regulations for the compulsory retirement of their officers, either on reaching a certain age, on having served a certain number of years in a grade or on having reached a certain age in a particular grade. Some, noticeably in France, have restrictions as to the length of service required that an officer must serve in the different grades, in time of peace, before being promoted, which is not a bad idea.

From this resumé, Major Kernan draws the conclusion that all the leading armies of the world having recognized the principles of promotion by seniority and selection combined into a single system, that their experience is worth considering and argues that, for this and other reasons, we should adopt, in part at least, some scheme for promotion by selection, particularly in the higher grades. He argues that we have to a certain extent a system of selection in our service in procuring our officers to fill the lower grades, in detailing officers for service in the Ordnance Department and in the General Staff and for other positions for service with increased rank and for appointment of general officers.

• He believes that, generally, these laws and regulations have given satisfaction and have been well administered and states: "Therefore, it is concluded that a board of officers, acting under oath, and with the same sense of responsibility to the service which is habitually seen in courts martial, affords a safe and competent instrument for selecting officers for promotion."

He gives reasons, and good ones, why any scheme for promotion by selection should not include the lower grades and ad-

vocates that it should be confined to the grades of field officers. But, he says: "To allow, however, a margin of safety and also because the existing agencies for eliminating the unfit are more efficient below the grade of major than among the field officers, it is thought that it would be advisable to have seniority to continue the sole rule up to include the majors." He says there are but two valid objections to this plan of commencing with the grade of lieutenant colonel, one being the adverse sentiment of the army against any system of promotion by selection and the other arises from the peculiar nature of the office of lieutenant colonel, as his duties are, normally, light and his responsibilities, etc.

As to the promotion by selection of colonels, he truly says: "That no doubt can exist of the great importance to the army of this office and no argument can ever justify its commitment to the unfit. But this is what we sometimes do. The officer earlier described, who merely continues to live and avoid a court-martial and who has become progressively less and less useful, comes at last, under our present rule, to a regiment as to the predestined victim of his unfitness."

Major Noble, in his article, agrees with Major Kernan and gives additional reasons why promotion by selection should be confined to the higher grades, and submits a proposed bill to carry out his ideas.

In general terms, his bill provides that any officer shall be retired, on his own application, after forty years' service—foreign service to count double—provided that he must have served at least thirty years; that any colonel of the line who has served forty years, is sixty years of age or has served eight years in that grade may be retired; that when any colonel of the line is sixty-two years of age and when any officer of the line below the grade of colonel is fifty-eight years of age, he shall be retired; that when any officer below the grade of lieutenant colonel has served thirty-five years, or thirty-two years with eight years of foreign service, he shall, on his own application, be retired; that all officers below the grade of lieutenant colonel shall be examined for promotion and if found deficient, either physically or professionally, he shall be suspended from promotion for six months and then

be re-examined, when, if he fails physically, he shall be retired with the next higher rank and if he fails professionally he shall, if below the grade of major, be honorably discharged with one year's pay, and if above the grade of captain, he shall be debarred from further promotion; that, in time of peace, promotion to the grade of colonel in the line shall be by selection from the three senior lieutenant colonels of that arm who have successfully passed the prescribed physical and professional examination, the selection to be made by a board of two general officers and three colonels of that arm.

The bill also provides that all original appointments to the grade of second lieutenant shall be, in time of peace, temporary and probationary for two years, then to be examined as to habits, moral character, physical and mental ability, education and general fitness for the service, and that at least one of these two years must be either with his regiment or corps or at a government school.

There are other minor provisions relating to retirement, to the detail of retired officers, etc., but the above are the main features relating to elimination and selection.

In case we are to have promotion by selection and an improved method of eliminating those physically, mentally and morally disqualified, this bill will form a good basis from which may be evolved a more complete one for the purpose.

If practicable, a proviso should be incorporated in this bill, or any bill for the regulation of promotion in the army, that provides that the findings of all examining boards, boards for selecting officers for promotion or for retirement shall not be subject to revision, so that none of their findings may be waived and thereby prevent any personal or political influence being brought to bear to affect the results.

Again, this bill or any bill for promotion should provide some scheme for regulating promotion between the different arms and corps of the service. There is not a more fruitful source of discontent in the army than is this one of the inequalities of promotion.

We have all seen many officers promoted—on an increase of a particular arm or corps—before they had earned such promo-

tion and before they had sufficient experience to properly fill the office to which promoted, to say nothing of the injustice and hard feeling caused in the other branches by seeing young and inexperienced officers put above them on the relative list. No officer should ever reach the grade of captain with less than five years' service, and ten would be better.

Of course, in time of war, this provision should not apply, as then the young officer gains experience rapidly and has many opportunities to show his worth and, if able and gallant, to prove that he is worthy of advanced promotion.

The following extracts from a letter from a general officer, formerly in the Infantry, are pertinent to this subject:

"You will know, I am sure, that I am as much interested in the welfare of the cavalry as I am the Infantry, and in every branch of the service I hope without prejudice, and will make every effort, as far as lies within my power, to promote the welfare of the entire service.

"There is not that united spirit in the Army that ought to exist, however, and measures for the Army are not always apparently dictated for the best interests of the service. Articles appear in the service papers which are ill-advised and only tend to create ill feeling. What the Army should do is to unite on a common policy for the efficiency of the entire service, without endeavoring to help one branch to the detriment of another.

"It is evident that the military committees, in both houses, are wide awake to a good many arguments which have not the best of foundations for certain legislation.

"There is no doubt that the Army should be increased, and yet I believe that if any one branch is helped first, it is recognized by most officers that the infantry is entitled to it. Their foreign service is harder and their strength is less according to their proportion than any other arm, unless it be the field artillery. I do not mean by this that the other branches should not also be increased.

"In any large increase for any one special arm, I also believe that there should be made a fair arrangement for the usual

promotion, that it should not be confined to the one branch, but equalized as far as possible.

"It remains for our service journals to do much towards shaping the spirit of fair legislation and discussion.

"In the course of my administration I am going to do the best I can for the common interest."



**Introduction
to
Military Geography.***

The assertion that an accurate knowledge of geography is of first importance to the military student, is so obviously a truism, that one seldom goes beyond the statement to consider how much is really involved therein. However well the average man may think he is posted on general geography, if he begins to test his knowledge, he is apt to find it painfully superficial. Even in the elementary matters of distance and direction, one is liable to harbor grave misconceptions. For example, the writer, until quite recently, was obsessed with the idea that the Isthmus of Panama was more nearly south of New Orleans than of New York and that the water routes from the southern parts of the United States to Bahia, Rio de Janeiro, or Buenos Ayres, were shorter than those, to the same parts, from Cadiz or Lisbon. If one's knowledge stands the test in such elementary matters, a reading of "An Introduction to Military Geography," by Brig. Gen. E. S. May, British Army, will probably convince him that he has made nothing more than a good beginning. The author

* "An Introduction to Military Geography" by Brigadier General E. S. May, C. B., C. M. G., General Staff Irish Command. Maps and Sketches. Hugh Rees, Ltd., London, 1909. Price 8'6, net.

plainly shows that accurate knowledge of physical configuration of the earth's surface, the distribution of land and water, the works of man, the locations of features, and their distances and directions from other features, is only the preface; and that climatology, acquaintance with local natural phenomena, such as tide, fogs and freshets, animal and vegetable products, flora and fauna, and sometimes even entomology, are equally parts of the subject, and of as great importance, in correctly estimating the possibilities of a region as a theater of operations.

The heads under which the subject, in general, is treated are natural and artificial frontiers, the influence of geographical features upon operations, the sea in relation to the operations of war, lines of communications, canals and waterways. These chapters may be read with profit by the military student of no matter what nationality. The special discussions, to which at least half of the book is devoted, are almost entirely confined to those regions of immediate importance to the British Empire. The construction of strategic railways in Asia Minor, the demarcation of spheres of influence in Persia, the three-fold characteristics of the Northwest Frontier of India, the guarantee of territorial integrity of Afghanistan, the creation of "buffer states," and of neutral zones, while of vital concern to the British officer, have been but academic interest to the American. The military geography of the United States receives but the briefest mention, and that of Canada but little more, and then only as her highways are considered as a line of communication with the Far East. The Panama Canal receives more attention, though the author seems a trifle skeptical as to the successful accomplishment of the enterprise—at least on the plans under which it is being constructed.

But if the book does not deal with the geographical subjects which are, or should be, of greatest interest to us, a careful study of General May's discussions will serve as a guide to such investigations. And their value cannot be overestimated. The importance of a fore-knowledge of the military geography of a theater should be brought home to us when we remember that it was ignorance of climatology (apparently) which sent our earlier expeditions into the tropics, burdened with clothing appropriate

to latitude 49°, and but inadequately protected against torrential rains; that it was ignorance of local conditions, upon Taylor's march through the sands of Southern Texas to the Rio Grande, which caused the tongues of his men to swell with thirst, when water in abundance was within three feet of the surface; and that it was ignorance of even the most obvious of geographical features which caused Scott to cumber his expedition to the Valley of Mexico, with a pontoon train, to the exclusion of much necessary food and ammunition, when his line of march, from Vera Cruz to the city, crossed no stream that was above the dignity of a rivulet.

The book contains 274 pages. The author's style is limpid and terse. The type is bold and clear. The maps are not up to the general excellence of the work in other respects and are inconveniently inserted in the body of the book instead of at the end.

Under the Red and Gold.* This is the title of the little book translated from the Spanish by Lieutenant Colonel F. L. Dodds, U. S. Army. This book will prove especial interest to all our military readers because of the mystery that has heretofore enveloped the story of the far-away Baler on the remote northeastern coast of Luzon.

Every American officer who has served in the islands has no doubt heard vague rumors of the noble defense made by the Spanish garrison in the church of Baler during the year following the occupation of the Philippines by the United States troops. To each of these the story told by Captain Cerezo will have an added value because of the exact facts of the siege related.

The fortitude and loyalty to their country exhibited by the Baler garrison must be, to the Spanish people, a source of deepest gratification and to all men an inspiration to patriotism and devotion to duty under conditions of hardship and deprivation.

*"Under the Red and the Gold—The Siege of Baler." Translated from the Spanish by Major F. L. Doods, U. S. Army. Franklin Hudson Publishing Co., Kansas City, Mo. Price \$1.25.

The story is told in simple and forceful language and the simplicity only emphasizes the horrors of the three hundred and thirty-seven days siege sustained by the small detachment.

Every officer will find the book well worth reading.

C. O. S.

**Strategy
of the
Franco-German War.***

This book, just published, is a work on strategy for the military student in which tactical questions are not discussed. The material for the book is stated in the preface to have been collected from the official accounts, and, insofar as the statements of fact could be checked up in a short time, the book seems to be remarkably accurate throughout. The arrangement is unusually good, the first half of the book being devoted to French, the second part to German movements, each being in chronological order with the dates in the margin where they will catch the eye. This arrangement enables the student to look up any particular event or the events of any particular day with the greatest facility. In pockets in the covers are two good outline maps and march tables that show the exact dispositions of each army for each day. The student will find the French General Staff map of the vicinity of Metz, scale 1:200000, which can be obtained from the Secretary of the Army Service Schools, to be of great assistance in following the more important parts of the movement described. A great aid in locating the various corps on the map will be found in the small charts which are numerous throughout the book, showing the real and supposed positions of the armies on various dates.

As a frame-work on which to build a thorough study of the history of the Franco-German War this book will be found invaluable, while one who desires to learn merely the bolder outlines of this war and to get them clearly in his mind, will find no other work in English that, while keeping free from bewilder-

* "Lectures on the Strategy of the Franco-German War of 1870," by Brevet Major W. D. Bird, D. S. O. Hugh Rees, Ltd., London. Price 6/0 net.

ing detail, will give so thorough a knowledge of the war as a whole. The work ends with Sedan. The author, whose style is easy, gives many valuable comments on the decisions of the opposing leaders, frequently pointing out other plays that were open to them at the time a particular decision was made.

On the whole the work is fully up to the standard of the series of military books recently brought out by the same publishers. It is printed in an attractive form with good type on a soft paper that is easy on the eyes, though impossible to use for marginal notes.

E.

Wa-fan-gou.* The Second volume of the history of the Russo-Japanese War, prepared in the historical section of the German General Staff, has been in the hands of the public some few months. This volume is given to the description of the battle of Wa-fan-gou and actions preliminary to Liao-Yan.

This will be but a brief review and will embrace only the first chapter, which is entirely devoted to a description of the battle which has been taken for the name of the second volume. From the first volume we are at once carried from Kuroki's army to the entire situation at the end of May. Little attention, practically none at all, is paid to the landing of the armies. A brief page is devoted to the question of the advisability of the southward movement at this time, and Kuropatkin's idea is given, and also that of Alexeiff, the ill-starred director of Russian events and oracle of poor advice.

A review of short space can hardly go into a discussion of the strategic sense or lack of sense displayed by sending Stackelberg southward at the time ordered. The comments at the end of the volume, which are but brief, being expressed in ten pages, seem to express the situation at the end of May

*"The Russo-Japanese War." Wa-fan-gou and actions preliminary to Liao-yan. Prepared in the Historical Section of the German General Staff. Authorized Translation by Karl von Donat, late Lieutenant 33d Fusileer Regiment, German Army. Hugh Rees, Ltd., London. U. S. Cavalry Association Sole Agents for the United States. Price, \$3.00.

and sum up all the results to be obtained by the movement as well as we have seen it done anywhere. Attention is invited, in this connection, to the report of one of our own observers, Captain Reichmann, pages 192-193. I cannot too strongly recommend to our officers the careful study of most of our own reports upon this war.

As regards Kuropatkin's idea of the situation at this time we now have the General's own work to turn to, as it has been published some two months. This work will be reviewed in some later issue of the JOURNAL but we wish to quote some from it here to illustrate the old axiom that two men cannot command an army. As long as there is a Halleck to interfere with movements, so long will the results of the generals in the field be small. A better example of the folly of not following One Man Power in war would be hard to find than this case of the unfortunate general (Kuropatkin) weighed down by that Old Man of the Sea, Alexeiff.

The following is from Alexeiff on March 1st, see Kuropatkin, Vol. 2, p. 208. "Separate operations against the fortress would only be really worth undertaking if the enemy could make certain of seizing it by a coup de-main, and the moment for this has passed. The land front is becoming more formidable every day, and, though not complete, the works are now well advanced; 200 additional guns have been mounted in Port Arthur itself, and more than forty at Chin-Chou; the strength of the garrison is being brought up by the reservists arriving from Trans-Baikalia, and the stocks of supplies are being increased. All the bays nearest the fortress, as well as the Port of Dalny, have been mined, and for the rest—the oft-proved stubbornness of the Russian soldier in defense can be relied on."

Turning to page 213 we find the following:

"At this time also, when the viceroy (Alexeiff) returned to Port Arthur after Admiral Makharoff's death, on April 13th, the weakness of the place began to be shown up, and Alexeiff's apprehensions as to its safety became acute. In a dispatch of May 16th he questioned whether the place would be able to hold out for more than two or three months, in

spite of all these steps taken to strengthen its defense." On April 25th the Chief of the Viceroy's staff telegraphed to me (Kuropatkin) that, owing to the inadequacy of the garrison, Alexeiff considered it essential that if the fortress were attacked, the field army should support it as energetically and rapidly as possible. Alexeiff was not singular in his pessemistic views, for Stossel also gave up hope of a successful defense of Port Arthur directly after he had so unnecessarily abandoned the Chin-chou position on May 27th. On the 28th, I received a telegram from him urging me to support him speedily and in strength. This opinion was again endorsed by Alexeiff, who telegraphed on June 5th that "Port Arthur cannot be called a storm-proof fortress, and it is a question whether it can even stand a siege of the length indicated in my telegram of May 16th."

Such a volte-face must have had its depressing influence of indecision upon Kuropatkin. And we are fully convinced that this feature of intervention with Kuropatkin was not ended with the fizzle of Alexeiff, but was continued throughout the war by a vacillating monarch too weak to court martial and shoot general officers who have been no better than traitors, even though we measure their culpability by incompetence rather than by intention. While I have no desire to extol Kuropatkin yet I find in my reviews of this war that it would require only a little more of the personal narrative to constitute an apology for "The Unfortunate General." Yet I believe that history will show Kuropatkin to have deserved a beter fate than the one that has befallen him.

The discription of the battle is largely a tactical discussion, and presumably we have the forces and their distribution as accurately as can be gotten. We find some difference in authorities as to numbers on both sides. But it appears that Stackleberg had a force of somewhere in the neighborhood of 30,000 men in the battle of Wa-fan-gou, called by some the battle of Telissu. I take it that the Japanese outnumbered him by somewhere near ten thousand men, though we find many contending that the forces were about equal.

This description gives the divisions and brigades engaged, but not the actual fighting force of the Japs.

If it should be asked what most struck me in this description I would say that the lack of a combatant character on the part of the Russian General. Had Grant, with his doggedness and firm belief in the idea of pushing harder when things are at a standoff, been in command, Wa-fan-gou would to my belief have been a different story. A determined stand against the odds on the Japanese left would have enabled the right to push the Japanese right back and the Russians might have had a temporary victory to cheer them up with its morale in place of the disheartening retreat under sense of failure. Of course the gain would have been but temporary. The Russian forces in Manchuria were not large enough at this time to play on interior lines and Kuroki could at any time offset any temporary advantage south of Liao-Yan by pressing forward against the weak lines in front of him.

In this battle we have a wonderful example of how to use cavalry and just as wonderful a one of how not to use it. Unquestionably the advance of the Japanese Cavalry brigade on the extreme Japanese right saved the day for the right wing of the Japanese Army. Had the Russian Cavalry done as well on their right the battle would have been a draw. But the incompetence of the Russian Cavalry was criminal. One would think that watchers would have sense enough to get on high hills to overlook surrounding country. Even years ago the coast inhabitants of the Philippines knew enough to build watch towers from which to look for Moro scows. Seemingly the Filipino would make a better cavalryman than a Cossack. I consider the inactivity of the Russian Cavalry on the Russians right the main cause of the disaster. Had Stackelberg known what was coming there he could have met the force with his reserve detachments and held them while his left fought on to victory, but the demoralization of an unknown force striking one's flank was too great for the "stubbornness" of the Russian soldier and Stackelberg gave the order to retreat while the left yet had a chance to win. If cavalry cannot

find brigades of troops within such distance that a night's march will place them on the flank of a position, then it does not deserve the name of cavalry. Certainly to a careful military student this battle is one of the most fruitful of the world's history in examples of the need of good cavalry and plenty of it.

Again we find on page 21 the following regarding the actions in the mountains around Siu-yan :

"When the Russians abandoned the heights south of Sui-yan, General Marui, hearing the brisk fire of Asada's brigade had also advanced, one of his batteries being just in time to intervene west of Sui-yan. The enemy was, however, not pursued vigorously, the weak Japanese Cavalry being no match for the enemy, and the other troops too tired, on account of fatiguing marches over the bad mountain paths (some portions had already covered 25 miles). The Japanese contented themselves with occupying the town, and merely pushed forward outposts along the main approaches." This is a full explanation of why more fruit was not gathered by the Japanese throughout the entire war.

As for the front occupied by Stackelberg for this defensive action it would appear it was not too wide or too narrow, though we find the following in the *London Times History* (reviewed in this JOURNAL some issues ago): "General Stackelberg appears to have occupied the very restricted front allotted to an army corps by the Russian Regulations and to have fought an old world battle in an old world manner." It may appear to some that Stackelberg played on too small a board. But four and three quarters miles of front for 30,000 men is not a very large allowance if we are playing our war games correctly. If our divisions are to occupy but one and one-half miles, can we say Stackelberg was too restricted when his force was distributed as mentioned above. Of course he was too restricted when we consider his cavalry flanking forces, but his orders to the cavalry on his right were sufficient to have prevented the disaster had he been possessed of true cavalry. So I fail to see that he was much in error in this regard. His reserve could have held the right had he been informed of the trouble there soon enough to pre-

vent its demoralizing influence. And it would seem strong tactical sense to keep forces well in hand in the presence of superior numbers.

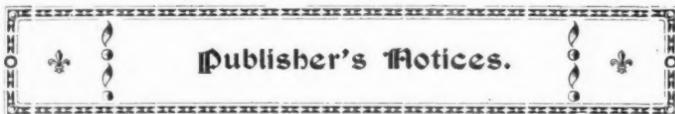
The German account pays quite a compliment to Colonel Harvard, one of our observers, by quoting the Russian losses from his report. And history is now giving the lie to the partisan statements of the *London Times*. But as stated in my review of this history, it was partisan, written by an ally of one of the belligerent powers, and is throughout highly colored as newspaper accounts will always be. But aside from this partisanship and the desire to make all things appear favorable to England's ally, the wish of the compiler to say biting and sarcastic remarks leads to many and many a truth and many and many a military moral. As a strategical study it will be many days before we have such masterly presentations as we find in the *Times History*.

Ian Hamilton falls into the same error as to losses as does the *Times*, but at that time it may have been natural to believe the Russian losses were heavy, because 30,000 men do not ordinarily retreat without losing some large per cent. of their force. Then probably Hamilton was unduly impressed by the old grave digger. It will be remembered that he constructed his idea of the battle from the account of the grave digger.

The reader is carried through the battle with clearness and mistakes arise before his eyes that he can see without having them pointed out. The maps are good and the names found with little difficulty. It is a good map problem to follow the various movements previous to the battle and the extended front and the work of the advanced parties.

The names in the text can all be found on the maps though one is apt to learn self restraint in finding some of them. Chapter II is given to the discussion of events in the southwestern portion of the theater of war until the beginning of August, 1904. The remainder of the work will be reviewed in a subsequent issue of the JOURNAL. Only in closing we might say that the present volume occupies as high a position as the first volume, and that it is the main work on the war to be bought and studied by our officers.

WHITE.



Publisher's Notices.

The attention of our members and readers is called to the several new advertisements in this number of the CAVALRY JOURNAL. The particular attention of our Fort Riley members is invited to those of the Junction City firms. It is to their interest to patronize them not only because they are reliable and responsible but in so doing you help the JOURNAL.

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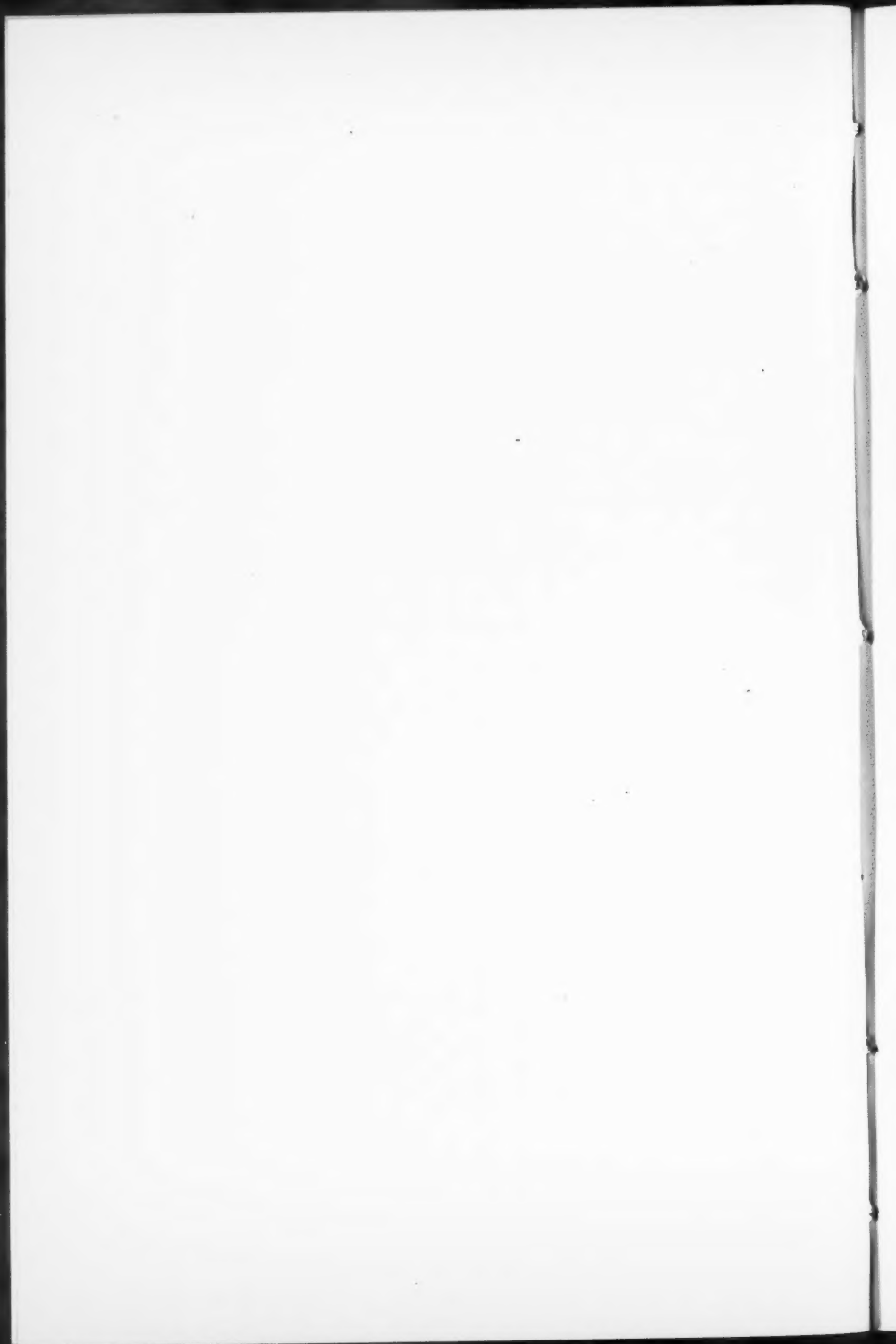
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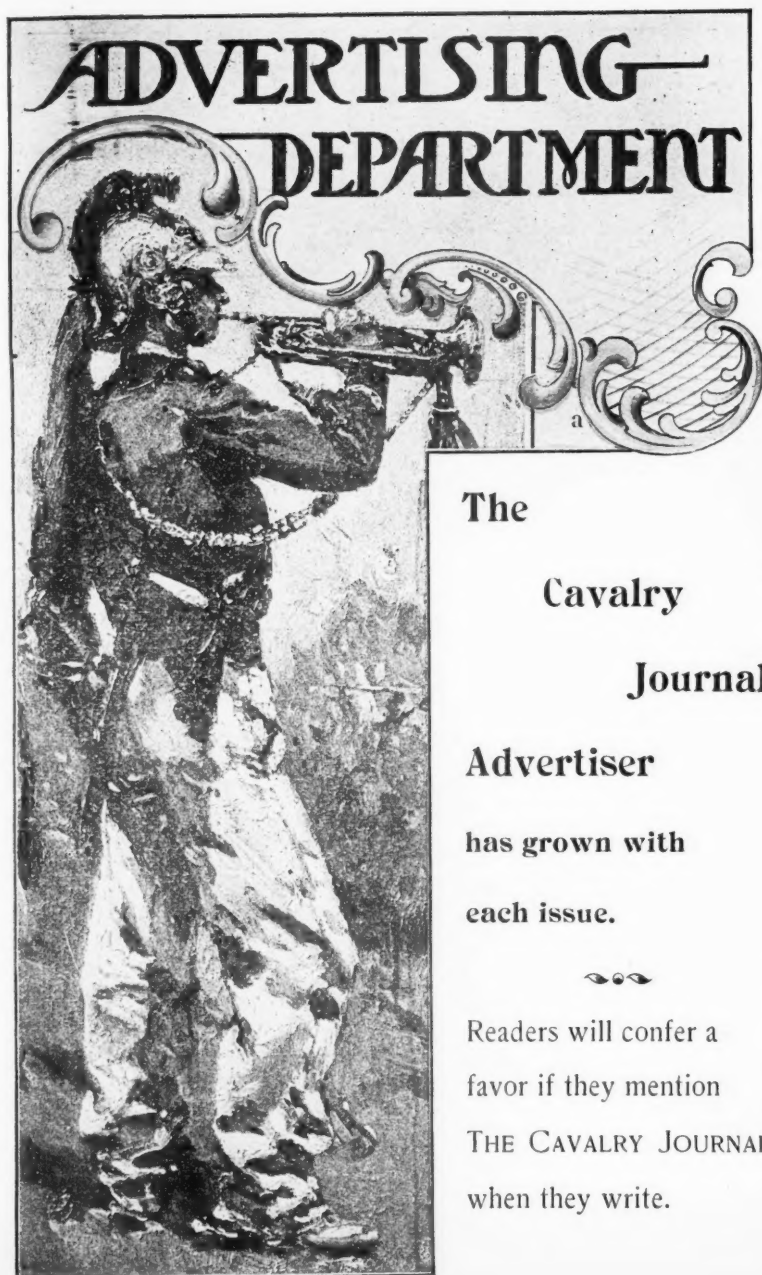
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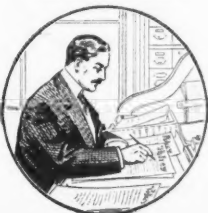
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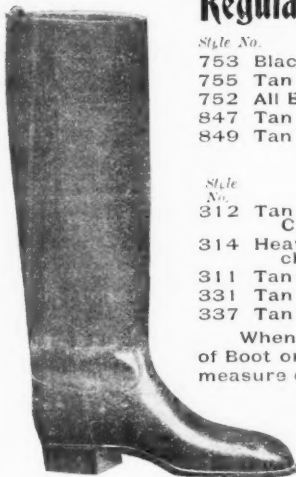
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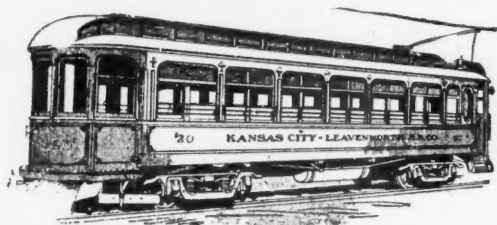
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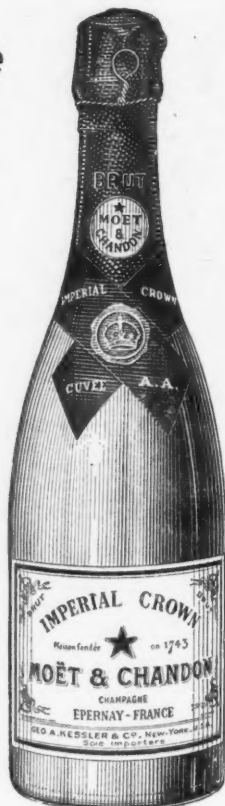


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